D 94794 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Printing Technology

PT 14 805 D—PACKAGING SCIENCE

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Discuss various applications of package.
2. Discuss latest trends in packaging.
3. With neat sketch, discuss the features of vacuum pouches.
4. What do you mean by flexible packaging ? List its applications.
5. What are the features of remoistenable glue ?
6. Compare hot-melt and cold seal adhesives.
7. Discuss the surface characteristics of plastics to be considered in packaging and its importance.
8. Write notes on edible food packaging.
9. What are the features and applications of gas concentration indicator ? Explain with an example.
10. Write notes on smart packaging of food.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

11. a) With neat diagrams, discuss 6 types of folding cartons. (10 marks)

    b) Explain the significance of a suitable package for a product. (5 marks)

Or

12. a) Discuss the following properties of boards and their testing procedures.

    i) Bursting strength. ii) Folding strength.

    iii) Chemical test. iv) Stiffness.

    (10 marks)

    b) What are the factors to be considered while selecting material for folding cartons ? Explain.

    (5 marks)

Turn over

13. a) Discuss the 4 elements of barcoding system. (8 marks)

b) Discuss the advantages and application of barcodes. (7 marks)

Or

14. With neat sketches, explain different styles of pouches.

15. Discuss the importance and testing procedure for various Barrier and mechanical properties of plastics.

Or

16. What are the various types of heat-sealing methods used in packaging ? Explain.

17. Discuss various properties required by packaging materials used for food packaging and its importance.

Or

18. Discuss various intelligent packaging techniques used for food packaging.

[4 × 15 = 60 marks]

D 94789 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Printing Technology

PT 14 804 D—PUBLISHING SCIENCE

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. What are the various elements of NEWS ? Explain in detail.
2. Explain in detail the Inverted Pyramid structure of writing a News story.
3. How does the duties and responsibilities of Bureau chief and foreign correspondent vary ? Explain.
4. Explain the different methods of NEWS gathering.
5. What are the aspects to be considered while reporting elections, civic affairs and legislature ? Explain.
6. How is TV reporting different from Newspaper reporting, Explain in detail.
7. Explain the importance of "Letter to the editor" section of a Newspaper.
8. Differentiate between the Editorial and the Advertorials of a newspaper.
9. Mention some of the symbols of editing and explain the importance of editing in a newspaper industry.
10. Explain the factors to be considered to design a good newspaper.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Explain the different types of leads with examples.

Or

12. Explain the different sections of a Newspaper and its importance to the reader.

Turn over

13. Explain in detail about the sources of NEWS - NEWS Beat Meetings and Speeches.

Or

14. Explain in detail about the five 'W's which need to be covered explicitly in the NEWS.

15. Explain any *eight* parts present in the outside page of a newspaper design.

Or

16. What are the important factors a Newspaper company should follow to retain its reputation for long time ? Explain.

17. Which are the different methods of publishing now available in the market ? Explain.

Or

18. Compare the effectiveness of online publishing with traditional publishing.

(4 × 15 = 60 marks)

D 94785–D (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Printing Technology

PT 14 803—SECURITY PRINTING

Time : Three Hours Maximum : 100 Marks

Part A

Answer **eight** *questions.*
Each question carries 5 *marks.*

1. Discuss the role of perforation in security printed documents and explain the different methods of perforation
2. With a suitable diagram, explain the working of s Barcode scanner.
3. Discuss the various printing processes used for MICR numbering.
4. List and explain the applications of holograms as a security device.
5. Differentiate between Barcode numbering and Passive RFID tags.
6. Explain the structure of a barcode. What are the factors that affect barcode readability?
7. Explain the security features of a MICR grade cheque paper.
8. Discuss the scope of dry offset printing process in Security printing industry.
9. Discuss the security features produced using Intaglio and offset printing processes.
10. What is the specialty of metameric ink ?

(8 × 5 = 40 marks)

Part B

Answer **all** *question.*
Each question carries 15 *marks.*

11. Compare the security features offered through the followings.

    (a) Planchettes. (b) Security fibers.

    (c) Guilloches. (d) See through Register.

Or

12. Explain the production process of hologram making in detail.

Turn over

13. identify five major security features embedded in Indian currency and write a note on each feature.

Or

14. Explain the design, printing and security features offered by followings inks against counterfeiting.

    (a) Fugitive ink.
    (b) Pantone color.
    (c) Photo Chromism inks.
    (d) Thermo-chromic ink.

15. Explain the printing and working principle of followings in security printing :

    (a) Split ink fountain.
    (b) Fusion Screen.
    (c) UV Ghost water mark.
    (d) Infra-Red black ink Barcode printing.

Or

16. Compare the following types of holograms :

    (a) 3D Single and Multiple Channel Rainbow Holograms.
    (b) Holographic Stereogram.
    (c) Multiple Plane Rainbow Holograms

17. Explain the importance of having following security features in bank cheques. Also, explain the method to create such features.

    (a) Copy / Void feature.
    (b) Invisible fluorescent printing.
    (c) Micro text printing.

Or

18. Explain the different methods used for making watermark security feature.

(4 × 15 = 60 marks)

D 94785-C (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Printing Technology

PT 14 802—PRINTING MACHINERY AND MAINTENANCE

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. What are the factors to be considered while doing maintenance for printing equipment ?
2. Discuss the objectives of maintenance management.
3. What are the factors to be considered for plate handling in offset machine ?
4. What are the possible causes and remedies of tinting ?
5. Why the start of a run is critical in offset machine ?
6. Write notes on maintenance of rollers, blankets and dampening system.
7. Distinguish between reciprocating and rotary compressors.
8. Write notes on purpose and replacement of lubricants.
9. Explain the role of chain in printing machine.
10. What are the advantages and disadvantages of belt drives ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

11. a) Discuss about the modern trends and applications of computers in maintenance. (5 marks)

    b) What are the different types of maintenance ? Explain. (10 marks)

Or

12. Explain maintenance planning, scheduling, controlling and maintenance records.
13. Discuss various electrical and electronic controls requires for offset press starting-up and running.

Or

14. Discuss post-press maintenance in detail.

Turn over

15. What are the reconditioning methods for various parts for inking and dampening systems ? Explain.

Or

16. a) Discuss about paint marks for lubricating points on the machines. (8 marks)

b) Explain the characteristics of lubricants. (7 marks)

17. Discuss various types, advantages and disadvantages of chains and sprockets.

Or

18. Discuss the following :

a) Micro switches.

b) Starting and regulating rheostat.

c) Knife switches.

[4 × 15 = 60 marks]

D 94785-B (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Printing Technology

PT 14 801—PRINT MANAGEMENT COSTING AND ESTIMATION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Explain the importance of business plan for printing industry.
2. Write notes on printing company management structure.
3. Give an account on management decisions.
4. What is the significance of employment policy ? Explain.
5. Write notes on journalizing rules.
6. Discuss the relation between cost and cost accounting.
7. What are the different costing techniques ? Briefly explain.
8. What are the purposes and functions of estimating from printer point of view ?
9. What are the factors to be required while estimating paper ?
10. What is the difference between costing and estimation ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

11. a) What are the criteria for printing organization ? (5 marks)

    b) Make a business plan for a commercial printing press. (10 marks)

Or

12. What are the functions of an efficient printing management ? Explain with relevant examples.

13. a) Give an account of trial balance and its format. (5 marks)

    b) Discuss about human resource management in printing industry. (10 marks)

Or

Turn over

14. a) Following direct costs were incurred on Job no. 650 of Royal Print.

Materials - Rs. 5050

Wages :

Dept. Pre-press (A) - 50 hrs @ Rs. 2.5/hr

Dept. Press (B) - 30 hrs @ Rs. 3/hr

Dept. Post Press (C) - 15 hrs @ Rs. 6/hr

Overhead expenses were estimated as follows :

Dept, Pre-press (A) - Rs. 6000 for 6,000 labor hrs

Dept. Press (B) - Rs. 4000 for 2,000 labor hours

Dept. Post Press (C) - Rs. 1500 for 500 labor hours

Fixed OH

Estimation at Rs. 30,000 for 15,000 normal working hrs

Calculate the cost of job and calculate the price to give profit of 25% on selling price.

(10 marks)

b) Give different ratios with formula used for performing ratio analysis. (5 marks)

15. The following information is obtained from the a/c of M/s Balaji Ltd in Rs.

DMC - 10,000, DW - 6,000, DE - 200, Factory OH - Variable 2,500, Fixed 500

Administration OH - Variable - 200, Fixed -800

Selling and Dist. OH - Variable - 1200, Fixed - 600

Sales - 25,000

- Compute Prime cost, Work cost, Cost of Production, Total cost and profit under absorption or full costing.
- Compute marginal costing, contribution and profit under marginal costing.

Or

16. a) Discuss various elements of costs and the costs which are to be ascertained by a cost accountant.

(10 marks)

b) What is cost-benefit analysis ? Briefly explain. (5 marks)

17. a) A full sheet job is to be printed in 4 color on each side of paper by offset process. Total impression required in the job are 1,00,000. Calculate the wastage allowance.

(8 marks)

b) Estimate the quantity of stitching wire required for making 1,50,000 answer books in a4 size. There are two wire staples in each answer book and each stitch requires 30 mm wire of 22 gauge.

(7 marks)

Or

18. a) How much paper in 61 × 88 cm will be required for the printing of 20,000 booklets in 210 × 297 mm size assuming that each booklet contains 24 pages.

(7 marks)

b) Estimate the quantity of ink required in kilograms for 30,000 copies of a sheet of label, 20 labels to view per sheet with each label having a print area 179 × 194 mm printed on one side of a high gloss coated paper. The process of printing is photo-offset and the label are printed in 4 color halftone picture.

(8 marks)

[4 × 15 = 60 marks]

D 94769 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 805 D—ADVANCED SEMICONDUCTOR DEVICE TECHNOLOGY

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. What are silicon strained structures ? List out their advantages.
2. Comment on importance of oxide thickness related to submicron MOSFETS.
3. Differentiate between quantum dots, quantum wires and quantum wells.
4. How heterojunctions are formed ? What are their features ?
5. Explain briefly about ballistic transport.
6. Explain GMR effect.
7. Explain briefly about ion implantation process.
8. Write short notes on fabrication of nanoparticles using self-assembly.
9. What is meant by split gate technology ?
10. Explain briefly about coulomb blockade effect.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

MODULE I

11. Explain in detail MOSFET device design-its scaling and non-scaling effects. (15 marks)

Or

12. Explain different types of scaling. What are its limitations ? (15 marks)

Turn over

MODULE II

13. Explain the basic structure, small signal operation and large signal operation of MESFET. (15 marks)

Or

14. Explain in detail about GaA1As/GaAs HBT. (15 marks)

MODULE III

15. With device structure and I-V characteristics explain the working of RTD. (15 marks)

Or

16. Draw the structure of single electron memory (SEM) and explain its working. (15 marks)

MODULE IV

17. Explain in detail fabrication of nanoparticles using :

    (a) Self-assembly. (7 marks)

    (b) Laser ablation. (8 marks)

Or

18. Explain in detail about :

    (a) Lithography. (7 marks)

    (b) Nanoimprint lithography. (8 marks)

[4 × 15 = 60 marks]

D 94768 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 805 C—CRYPTOGRAPHY AND NETWORK SECURITY

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

I. 1 Write short notes on Steganography.

2 Discuss the design principles of block cipher technique.

3 Differentiate between mono alphabetic and poly alphabetic cipher.

4 Explain the Fermat's theorem.

5 Explain about elliptic curve cryptography.

6 Give and discuss authentication protocols.

7 Explain about data authentication code.

8 State and explain the properties of hashing functions.

9 What is e-mail security ? Explain the technique for e-mail security.

10 Differentiate between tunnel mode and transport mode of IPSec.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*

II. 1 i) Briefly explain the security services and mechanisms defined under X800 standard.

ii) Explain the UDP session hijacking in brief.

Or

2 Explain Data Encryption Standard (DES) in detail.

3 i) Briefly explain the Diffie Hellman Key Exchange algorithm.

ii) Explain the Chinese remainder theorem with an example.

Or

4 i) Discuss the principles of public key cryptosystems.

ii) Using RSA algorithm, Find n, d if $p = 11$, $q = 3$, $e = 3$. Encrypt "Hello World" Message.

5 Briefly explain the different message authentication functions with neat diagrams.

Or

6 i) Write short notes on digital signature standard.

ii) Describe signing and verification in Digital Signature Algorithm.

7 Explain Secure socket layer in details.

Or

8 i) What is IDS ? Explain the profile based IDS.

ii) Briefly explain Encapsulating IP Security Payload.

(4 × 15 = 60 marks)

D 94765 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 804D—MOBILE COMPUTING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

I. 1 Enlist the applications of Mobile computing.

2 Explain the role of HLR entity of a GSM network.

3 List out the advantages of data broadcast over point-to-point access.

4 List the specifications of physical medium dependent and its sub layers in IEEE802.11.

5 Describe the advantages and disadvantages of WLAN.

6 Explain Geographic-position-assisted ad-hoc routing.

7 Why standard TCP is not suitable for wireless networks ?

8 What is basic purpose of DHCP ? Name the entities of DHCP.

9 Describe the components of WAP2.0.

10 Explain the features of WML.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*

II. 1 a) Show with a diagram the steps involved in a mobile terminated call (a station calling a mobile station) in GSM.

(7 marks)

b) Give reasons for a handover in GSM and the problems associated with it. Discuss the typical steps for handover are and what types of handover can occur.

(8 marks)

Or

Turn over

2. Explain about GPRS system in detail.

3. a) Discuss the Wi-Fi-IEEE 802.11. (8 marks)

   b) Mention the design goals of WLANS. Discuss its advantages and disadvantages. (7 marks)

Or

4. a) Explain in detail about IEEE 802.11 MAC Data frames. (8 marks)

   b) Give brief explanation of IEEE 802.15 its profile and applications. (7 marks)

5. Explain the following protocols used by MANET for routing :

   a) Dynamic Source Routing.

   b) Ad-hoc On-demand distance vector routing.

   c) Cluster head gateway switch routing.

   d) Table driven fat routing.

Or

6. a) Describe the process of optimization in mobile IP with a suitable timeline diagram. (8 marks)

   b) Discuss the design goals of Mobile IP. (7 marks)

7. a) Explain in detail about the WAP 2.0 and discuss the components. (8 marks)

   b) Write short notes on gateway and protocols of WAP. (7 marks)

Or

8. a) Explain the WML script used in mobile devices. (7 marks)

   b) Brief out the features and need about the XML. (8 marks)

[4 × 15 = 60 marks]

D 94764 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 804 C—MICROWAVE ACTIVE DEVICES AND CIRCUITS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

I. 1 Explain noise in microwave circuits.

2 Write short notes on phase shifters.

3 State the limitations of conventional solid state devices at microwaves.

4 Explain different biasing techniques used for microwave bipolar transistor.

5 What are the basic steps in the design process of RF amplifier circuits ?

6 Design a one port negative resistance oscillator.

7 Explain the importance of impedance matching or tuning.

8 Discuss the significance of k-β diagram in filter characteristics.

9 List the characteristics of planar transmission lines.

10 Describe the types of MIC's.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*

II. 1 a) Explain the operation and construction of Crystal diode detector and Mixers. (10 marks)

b) Compare single ended mixer and balanced mixer. (5 marks)

Or

2 a) Examine the Diode Rectifier Operation. (10 marks)

b) Discuss the performance parameters of PIN Diode. (5 marks)

3 a) Derive the expression for input stability circle equation. (10 marks)

b) Why GaAs MESFETs are preferred over Si MESFETs ? (5 marks)

Or

Turn over

4 Derive the equations for power gain, available gain and transducer gain of a microwave amplifier using S-parameters.

(15 marks)

5 a) With neat circuit explain the Design procedure of an *m*-derived LPF section and plot the frequency response.

(10 marks)

b) Define wave velocity. Explain in detail. (5 marks)

Or

6 a) Discuss in detail about impedance and frequency scaling.

b) Write short notes on coupled line filters.

7 a) Explain strip line in detail. (7 marks)

b) Explain the fabrication technique involved in hybrid Microwave Integrated Circuits in detail.

(8 marks)

Or

8 a) Compare Monolithic MICs with hybrid MICs. (7 marks)

b) Write about the dielectric materials. (8 marks)

[4 × 15 = 60 marks]

D 94763 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 804 B—PHOTONIC SWITCHING AND NETWORK

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Name the SONET layers and explain their major functions.
2. Draw optical hub topology and bus topology distribution network.
3. List the specifications of a SOA.
4. Explain the significance of pumping wave length of 980nm.
5. Describe the meaning of rise time budget.
6. List and explain the important parts of a optical transmitter.
7. List the parameters for evaluating an optical switch.
8. What is BPON ? Explain.
9. Explain fiber Bragg grating.
10. List the advantages of WDM system.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

11. Construct a 8 × 8 star coupler by using 2 × 2 couplers. Calculate the number of stages and total number of 2 × 2 couplers required to realize the star coupler.

Or

12. Explain the principle of Fabry Perot tunable filter.
13. Discuss with suitable energy band diagrams, the mechanism by which amplification happens in an EDFA.

Or

Turn over

14. A semiconductor optical amplifier has facet reflectivity of 30% and a single pass gain of 5dB.The device has an active region of length 350 micro meter, peak gain wavelength is 1550 nm, and mode spacing of Inm. Calculate refractive index of active region.

15. What is link power budget? Explain the features of it.

Or

16. Find the maximum permissible link length for a light wave system at a data rate of 20M bps with a BER of 10^{-9}. Transmitter is emitting at 850 nm can couple an average 60μW of optical power into a fiber. The fiber is a graded index type having α = 2.5dB/km.

    A pin photodiode has been used as receiver, with input signal of-40 dBm. Connector loss is ldB.

17. Discuss the design rules in Soliton based communication system.

Or

18. List and explain the non linear effects in fiber.

(4 × 15 = 60 marks)

D 94761 **(Pages : 2)** **Name.....**

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 803—WIRELESS MOBILE COMMUNICATIONS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Briefly explain cell splitting.
2. How frequency reuse helps in enhancing spectrum efficiency ?
3. Differentiate between frequency selective fading and time selective fading.
4. Briefly explain (a) Coherence bandwidth ; and (b) Coherence time.
5. Explain the different linear combining methods.
6. Explain the features of CDMA.
7. Briefly explain the features of OFDM system.
8. What is the role of visitor location register and interworking location register ?
9. How multi-user detection is done in CDMA ?
10. What are the different hand off strategies ?

(8 × 5 = 40 marks)

Turn over

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

MODULE I

11. Write briefly about :

    a) Trunking. (5 marks)

    b) Grade of service. (5 marks)

    c) Sectoring. (5 marks)

Or

12. a) Explain how radio resource management and power management are done in wireless communication system. (10 marks)

    b) Explain co-channel interference and adjacent channel interference. (5 marks)

MODULE II

13. Explain the free space propagation model. (15 marks)

Or

14. a) Explain fading effects due to multipath time delay spread and also due to Doppler spread. (10 marks)

    b) What are the factors influencing small scale fading ? (5 marks)

MODULE III

15. Explain RAKE receiver in detail. (15 marks)

Or

16. Explain DSSS with its transmitter and receiver. (15 marks)

MODULE IV

17. Explain UMTS network architecture in detail with its figure. (15 marks)

Or

18. Explain in detail Wi-Fi and its air interface standards. (15 marks)

[4 × 15 = 60 marks]

D 94760 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 802—ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

I. 1 Brief on various functions of management.

2 List and brief about the various steps involved in typical selection process.

3 Narrate Break Even Analysis with a simple example.

4 Enumerate the basic concepts of Marketing Environment.

5 Define Marketing.

6 Discuss in brief about Technical efficiency and Economic efficiency.

7 Narrate the various types of elasticity.

8 Brief about the merits and limitations on Value analysis.

9 Write short notes on Benefit-cost ratio.

10 Write short notes on Effective investment rate.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*
Each question carries 15 *marks.*

II. 1 Paraphrase the principle involved in a typical managerial decision making process and discuss its types.

Or

2 Illustrate and explain the basic steps involved in a typical selection procedure.

Turn over

3 Explain the concept of break even analysis with clear diagram ?

Or

4 Discuss the various parameters involved in Marketing Management.

5 Briefly explain about element of cost and its classification ?

Or

6 Explain in brief about monetary policy and fiscal policy.

7 Explain the Single payment compound amount factor and Single payment present worth factor in detail ?

Or

8 Discuss the terms Internal rate of return, Payback period and Net present value.

(4 × 15 = 60 marks)

D 94759 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC 14 801—DATA AND COMMUNICATION NETWORKS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Prove that inter arrival time in a poisson process is exponential.
2. State and prove little's theorem.
3. Compare pure and slotted ALOHA.
4. Briefly explain IEEE 802.5(token ring) standard.
5. Draw and explain the frame format of 802.3 standard.
6. Explain the difference between go-back N and selective repeat.
7. Explain the MAC layer in FDDI.
8. What are the advantages of Internet TCP/IP model over OSI model ?
9. Define the bit stuffing.
10. What are the main elements of traffic engineering ?

(8 × 5 = 40 marks)

Part B

Answer any **one** *full question from each module.*
Each full question carries 15 *marks.*

MODULE 1

11. For an M/M/1 queue, derive an expression for (i) Average length of the queue (ii) pdf of waiting time of a customer in the system (iii) Average waiting time of customer in the system (iv) pdf of waiting time of a customer in the system.

(15 marks)

Or

12. "OSI architecture defines partitioning of network functionality" Illustrate on the statement with appropriate diagrams.

(15 marks)

Turn over

MODULE 2

13. Describe the HDLC with their frame structure. Explain each field of frame briefly.

(15 marks)

Or

14. Write a short note on Automatic Repeat Request.

(15 marks)

MODULE 3

15. (a) Derive an expression to prove that throughput of "Slotted ALOHA" is approximately twice than that of "Pure ALOHA".

(10 marks)

(b) What is the effect of delay time in ALOHA on its throughput ? Discuss the stability in ALOHA system.

(5 marks)

Or

16. (a) Write a short note on CSMA/CD protocol. (10 marks)

(b) Give advantages and limitation of CSMA/CD and token bus networks. (5 marks)

MODULE 4

17. (a) Derive Erlang C formula. (10 marks)

(b) Give the comparison between single stage switch and multistage switch in telecom switching network.

(5 marks)

Or

18. (a) A switching system serves 10,000 subscribers with a traffic intensity of 0.1 E per subscribers. If there is a sudden spurt in the traffic, increasing the sudden traffic by 50%, What is the effect on arrival rate ?

(5 marks)

(b) Write a short note on delay model. (10 marks)

[4 × 15 = 60 marks]

D 94755 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION NOVEMBER 2020

Electrical and Electronics Engineering

EE 14 805 A—SPECIAL ELECTRICAL MACHINES

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Define i) torque constant and slewing of a stepper motor.
2. Distinguish the modes of excitations in stepping motors.
3. Why the number of stator and rotor poles is not same in switched reluctance motor ? Explain.
4. Express and explain the voltage and torque equation of synchronous reluctance motor.
5. Discuss some potential applications of synchronous reluctance machine.
6. Enumerate the assumptions to be made in deriving the EMF equation of PMSM ?
7. Compare and contrast mechanical and electronic commutator.
8. Elaborate the working of AC Servo motors.
9. Explain the principle of repulsive motor.
10. Explain the significance of slotless linear synchronous motors.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

1. a) Construct and evaluate the operation of single stack and multi-stack stepper motor with a neat diagram.

Or

b) Discuss the various converter topologies for a 3 phase switched reluctance motor with merits and demerits of each. Explain any *two* of them.

Turn over

2. a) i) Generalize the expression for the torque equation for the synchronous reluctance motor. (6 marks)

ii) Investigate the performance of the synchronous reluctance motor with neat phasor diagram. (9 marks)

Or

b) Deduce the expression for synchronous reactance of PM synchronous motor.

3. a) Discuss the use of Hall sensors for position sensing in PMBLDC motor with necessary block diagram.

Or

b) Derive the transfer function of AC servomotor and discuss its applications in detail.

4. a) i) Discuss the application of double sided linear induction motor for traction drives.

ii) Explain the construction and working of AC series motor.

Or

b) i) Discuss the operating principle and applications of linear synchronous motors.

ii) Explain the construction and working of attraction type linear levitation machine.

[4 × 15 = 60 marks]

D 94752 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE 14 804 B—BIOMEDICAL ENGINEERING

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten. Each question carries 5 marks :

1 Briefly explain how action potentials are propagated.

2 Discuss the functional organization of peripheral nervous system.

3 Explain the features of micro electrodes.

4 Explain the working principle of plethysmoraphy.

5 Explain how cardiac output is measured.

6 Explain the concept of Einthoven's equilateral triangle.

7 What are the different types of ventilators in clinical use ?

8 Explain the procedure of taking EMG measurement.

9 Write in detail about radiation therapy.

10 Give any five applications of computed tomography.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions. Each question carries 15 marks :

11 With a neat block diagram explain different components of man instrument system and the problems encountered in biomedical measurements.

Or

12 With neat diagrams explain different types of biochemical transducers.

13 With neat block diagram explain the working of ECG machine and different lead configurations.

Or

14 With neat schematic diagram explain the structure and working of ultrasonic blood flow meter.

Turn over

15 Explain in detail the procedure of taking EEG and EMG measurements.

Or

16 Illustrate the working principle of heart lung machine and its components with neat block diagram.

17 With neat schematic explain the working principle of an X-ray machine and its major components.

Or

18 With neat block diagram explain the principle of computed tomography and image reconstruction.

(4 × 15 = 60 marks)

D 94750 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE 14 803—POWER SYSTEM PROTECTION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. List the properties of insulating and Arc quenching materials.
2. State about Arc Interruption.
3. Explain recovery voltage.
4. Classify the insulation and their modes of failure.
5. Explain the effect of lightening on power system.
6. Briefly explain the essential qualities of protective relay.
7. How protective relays are classified ? List them.
8. List the merits and demerits of static relays.
9. Outline the term digital message security.
10. Explain over fluxing protection of a transformer.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*
Each question carries 15 *marks.*

1. a) Show an expression for Restriking voltage and rate of rise of restriking voltage (RRRV) in a C.B.

(8 marks)

b) Illustrate the current chopping ? Explain how can the effect of current chopping be minimized.

(7 marks)

Or

2. Discuss with neat sketch, the construction and working of minimum oil circuit breaker. Also gives its merits and demerits.

Turn over

3. Explain the types of reactors in detail.

Or

4. Explain clearly why lightning arresters are used. Describe any type of oxide film arresters with a neat sketch and explain its underlying features. Name other types of lightning arresters used nowadays in protecting equipment and overhead lines.

5. Discuss the construction details and principle of operation of induction type directional over current relay.

Or

6. a) Explain the term pilot with reference to the power line protection. What are the different types of pilots ? Discuss their field of application.

(9 marks)

b) Show which type of relay is best suited for long distance very high voltage transmission lines system ?

(6 marks)

7. With a suitable sketch explain microprocessor based impedance relay.

Or

8. Describe the types of protective schemes employed for the protection of field winding and loss excitation of alternator.

[4 × 15 = 60 marks]

D 94749 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE 14 802—FACT'S CONTROLLERS AND CUSTOM POWER DEVICES

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

I. 1 List and explain briefly important controllable parameters that are considered for power flow control.

2 Discuss the factors which limit loading capability.

3 Explain necessity of VAR compensation in transmission system.

4 Why static compensator not used as perfect voltage regulator ? Justify.

5 Discuss the objectives of series compensation.

6 List out the technical benefits of UPFC.

7 State and explain the effects of harmonics.

8 Briefly discuss harmonic standards.

9 Explain the working of DVR.

10 Differentiate between UPFC and UPQC.

(8 × 5 = 40 marks)

Part B

Answer **all** *the questions.*

II. 1. i) Explain midpoint voltage regulation for line segmentation using shunt compensation.

ii) Explain the working and characteristic of Thyristor Controlled Reactor.

Or

2 i) Explain with a neat block diagram general control scheme of Static Var Compensator.

ii) Explain the principle of operation of thyristor based transformer Tap changer.

Turn over

3 i) Discuss the improvement of voltage stability using shunt compensation.

ii) What is transient stability ? How attainable enhancement of transient stability can be done by SVC and STATCOM ?

Or

4 i) Explain with neat sketch the working of Static series synchronous compensator.

ii) Compare STATCOM and SVC.

5 i) Explain about characteristics of voltage sag and voltage swell in detail.

ii) What are the different power quality issues related to distribution systems ?

Or

6 i) Explain how voltage source converter used for compensation of voltage sag

ii) Write short notes on Power system transients.

7 i) Discuss the demerits of passive filters.

ii) Explain the working of a shunt active filter with neat diagram.

Or

8 Explain in detail about the process of protecting the load from harmonic voltages using UPQC.

(4 × 15 = 60 marks)

D 94748 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE 14 801—ELECTRICAL SYSTEM DESIGN

Time : Three Hours Maximum : 100 Marks

Part A

1. Explain the salient features on Indian Electricity Act.
2. Identify the methods of internal wiring.
3. Explain the procedure for pipe earthing.
4. Enumerate the qualities of good lighting schemes.
5. Define absorption factor and reflection factor.
6. State the electrical aspects of air conditioning.
7. Tell the selection procedure of LT cables.
8. Explain the need for improving power factor.
9. Describe shortly the lightning protection of buildings?
10. Distinguish earth buses and earth wires.

(8 × 5 = 40 marks)

Part B

11. Discuss the Electrical installation of commercial buildings and their Safety aspects.

Or

12. Explain how the materials have been estimated for doing the wiring of a small residential building and give its schematic diagram.

13. a) Explain how to calculate COU based on room index.

    b) Identify the types of lighting schemes.

Or

14. Write short notes on the design of : i) Industrial Lighting ; and ii) Hospital lighting.

15. Explain the various types and testing of LT cables.

Or

16. Discuss about the Automatic Power Factor Correction scheme with neat diagram.

17. Draw and brief the schematic diagram of 16 MVA-110/11KV outdoor substation having two incoming and 8 outgoing feeders.

Or

18. Explain the measurement of earth resistance using Megger and brief the earth mat design.

(4 × 15 = 60 marks)

D 94746 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 805 F—INDUSTRIAL MAINTENANCE

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions from Part A.*

1. Define maintenance and classify different types of maintenance.
2. Why maintenance management is necessary ?
3. Sketch the organization structure of a maintenance department.
4. What are the undesirable effects of misalignment ?
5. Describe the static balancing procedure conducted for rotating shafts.
6. List the vibration severity criteria applicable to rotating shafts.
7. Compare destructive and non destructive testing methods.
8. Explain the method of testing welded joints of oil pipelines.
9. Define reliability. Why it is considered as a very important characteristic ?
10. Explain different methods of life testing.

(8 × 5 = 40 marks)

Part B

Answer any **one** *question from each module.*

MODULE I

11. Describe the objectives of maintenance. Give an account of the economic aspects of it.
12. Write short notes on : a) Overhauling ; b) Scheduled maintenance ; and c) Corrective maintenance.

Module II

13. Explain any one method of vibration monitoring. How the vibration is analyzed ?

14. Explain one of the vibration analysis technology adopted to ball and roller bearings.

Module III

15. Give a classification of non destructive testing. What are the merits and demerits of it ?

16. Explain the working of an ultrasound tester used for thickness measurement.

Module IV

17. Explain the regimes of the bath tub curve and the properties of each regime.

18. If a resister with component reliability 0.8 and a transistor with reliability 0.9 are connected in parallel and the assembly is connected in series with a capacitor of reliability 0.8. Calculate the overall system reliability.

(4 × 15 = 60 marks)

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 805 B—HEATING, VENTILATION AND AIR CONDITIONING DESIGN

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Briefly explain the purpose of an aspirator in a psychomotor.
2. What is the by-pass factor ? Explain its usefulness.
3. Confer the term GSHF and ESHF.
4. Recommended the capacity of a refrigeration system required for an adiabatic chamber for maintaining - 30°C having Q_{Design} = 5600 kJ/h.
5. Confer the term cooling loads.
6. A room of size 12m × 5 m × 4m high is maintained at T_{db} = 28°C and Φ = 60%. The infiltration amounts to two air change per hour. Determine the infiltration load.
7. A rectangular duct of size 2000 × 1600 mm handles air at a rate 37 m^3/s. It has one 90° bend and straight length of 40 m. Get the pressure drop for the duct. Take bend equivalent to 4 times the duct diameter.
8. Briefly explain the three processes occur in the condenser.
9. Briefly discuss about unitary air-conditioner.
10. Explain the year-round air conditioner.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. The value obtained from a sling psychrometer are : t_{db} = 30°C and t_{wb} = 20°C. The barometric reading is 740 mm of Hg.

    Calculate :

    (a) Dew point and relative humidity. (3 marks)

    (b) Degree of saturation. (3 marks)

Turn over

(c) Specific humidity. (3 marks)

(d) Specific volume. (3 marks)

(e) Specific enthalpy. (3 marks)

Or

12. The total room cooling load was estimated to be, 1,40,000 kJ/h when the ambient and inside design conditions are T_{db} = 40°C, T_{wb} = 30°C and T_{db} = 27°C, Φ = 60% , respectively. The bypass factor for the cooling coil is 0.14 and ADP BEING 4.5°C lower than that of the dew point temperature corresponding to the room desings condition.

Find :

(a) ADP (4 marks)

(b) Volume of air supplied to the room, and (5 marks)

(c) Tonnage of the cooling coil. Show the sate points on psychrometeric chart. (6 marks)

13. Calculate the overall heat transfer coefficient for a double pipe mild steel having inner and outer diameters 20 and 25 mm respectively. The refrigerant vapour condenses outside the inner tube for which h_0 is 4000 kJ/m^2-h-K. Water flows through the pipe at a rate of 0.4 kg/s with an average temperature 313 K. The temperature rise of water is 3 K. The condensing temperature is 320 K. Fouling factors are 0.003 and 0.0001 m^2-h-K/kJ for the inner and outer surfaces, respectively. Also calculate the heat transfer rate per unit area.

Or

14. A walk-in refrigerator of size 1 × 4 × 2.5 m high is to maintain at 260 K when the ambient conditions are T_{db} = 310 K and T_{wb} = 290 K. Calculate the infiltration load for the average usage.

15. The conditioned air at T_{db} = 18°C and 60% is to be supplies through a duct (40 m long) at a rate of 20.23 kg/s. the duct width is not to exceed 1000 mm. Determine the size of the duct, pressure drop and power of the blower. Take air velocity in the duct as 8 m/sec.

Or

16. A fan supplied air across a cooling coil of 15 ton capacity. The air enters at T_{db} = 30 °C and Φ = 50%. The catalogue of fan shown that it delivers 2.5 m^3/s against a pressure of 500 N/m^2 when operates at 10 RPS. Determine the fan (a) speed, (b) pressure drop and power input to it if its overall efficiency is 0.8.

17. Determine the time required for the centre of a thin slab of meat to reach a temperature of 4°C. The temperature of the cooling medium is 2°C. The initial temperature of the product is 35°C. The thickness of the slab is 10 cm and is cooled from both sides. The heat-transfer co-efficient is 23 W/m^2 °C. The properties of meat are : k = 0.6 W/m°C ; C_p = 3.65 kJ-kg°C ; p = 1040 kg/m^3.

Or

18. Describe the details of a heat pump working on the vapour-absorption system with a neat sketch.

[4 × 15 = 60 marks]

D 94741 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 805A—QUALITY ENGINEERING AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Describe the TQM axioms with appropriate illustration.
2. Explain the responsibilities of green belt and black belt in six sigma.
3. Distinguish between Kaizen and Deming's approach.
4. Elaborate on document preparation for ISO quality system for a service industry like hospital.
5. Draw and explain Ishikawa diagram for a bulb failure.
6. Explain the matrix diagram with a case study.
7. Illuminate on individual measurement control charts are usage.
8. Elaborate on demerit control chart and state its advantages.
9. Explain the advantages of acceptance sampling.
10. Draw an OC curve for a single sampling plan and show its parameters on the curve.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*
Each question carries 15 *marks.*

11. (a) Discuss Deming's fourteen points on quality management as applied to an automobile industry.

Or

(b) Explain the process of implementing Six Sigma in a typical manufacturing organization.

12. (a) The design team of a leading car manufacturer is involved in developing the dashboard (front panel). Assume that they have come up with three conceptual models. In current model, the customers feel that the existing product is of old look, not stylish and quality is not to their expectation. Hence develop the Quality Function Deployment (QFD) to design the dashboard. Also briefly explain the elements of QFD.

Or

(b) Prepare a pareto diagram for an organization manufacturing wet grinder. The number of complaints received for 12 months are as follows :

S.No.	*Nature of failures*	*No. of complaints.*
1	Ball bearing failure	23
2	Stone damage	18
3	Handle failure	41
4	Thrust bearing failure	37
5	Drum leakage	8
6	Spade failure	16

13. (a) A company produces 10,000 special valves during ten days period. Random samples of 50 numbers is drawn twice a day and determine number of defectives among them. The data collected are as follows in Table 1 :

Sample lot No. :	1	2	3	4	5	6	7	8	9	10	11	12	13
No. of Defectives :	6	3	8	10	7	15	20	13	9	8	5	14	9
							14	15	16	17	18	19	20
							11	5	6	3	13	6	9

Find out the state of process and establish the control limits for future use.

Or

(b) The following data (Table 2) are obtained from an automatic filling process of a certain chemical delivered into a container. The sample size was 3. The specification for the weight of the filled in container is 50 ± 4 grams :

Table 2

Sample No. :	1	2	3	4	5	6	7	8	9	10	11	12	13	14
X_1 :	51	52	51	48	53	51	52	54	53	50	49	54	51	53
X_2 :	50	53	52	49	49	49	53	52	53	52	49	54	51	50
X_3 :	52	52	52	52	49	49	47	51	52	52	52	53	54	52

(i) Setup X and R control charts. Is the process under control.

(ii) Determine whether the process meets the specifications.

14. (a) Determine the equation for the OC curve for the sampling plan N = 10,000, n_1 = 200, c_1 = 2, r_1 = 6, n_2 = 350, c_2 = 6 and r_2 = 7. Construct the curve using about 5 points.

Or

(b) Discuss about life testing and reliability of a product of your choice.

(4 × 15 = 60 marks)

D 94737 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 804 D—CRYOGENIC ENGINEERING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. List out the desired properties of cryogenic fluids.
2. Explain the use of cryogenic technology in electric power transmission.
3. Briefly explain on thermal properties of engineering materials at cryogenic temperature.
4. Describe how a cascade system can be used to produce liquid nitrogen.
5. Describe the significance of inversion temperature in liquefaction of gases ?
6. What are the significance of cryogenic refrigeration systems ?
7. Show the vapour compression cycle on T-S diagram for the following cases :
   (i) Vapour is dry and saturated at the end of compression.
   (ii) Vapour is superheated after compression.
8. Enumerate different ways of producing refrigeration.
9. Briefly explain about different types of heat exchangers used in cryogenic systems.
10. List out the advantages of super insulations for cryogenic systems.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (a) Discuss the variation of different properties of materials during transition from normal to superconducting state.

Or

(b) Explain with an illustration the application of cryogenic in electronics.

Turn over

12. (a) With a neat sketch, explain the pre-cooled Linde Hampson system for liquefaction of Neon and Hydrogen gases.

Or

(b) In an ideal liquefaction system derive an expression for work required for per unit mass compressed.

13. (a) A refrigerating plant works between temperature limits of – 5°C and 25°C. The working fluid ammonia has a dryness fraction of 0.62 at entry to compressor. If the machine has a relative efficiency of 55 %, Calculate the amount of ice formed during a period of 24 hours. The ice is to be formed at 0°C from water at 15°C and 6.4 kg of ammonia is circulated per minute. Specific heat of water is 4.187 kJ/ kg and latent heat of ice is 335 kJ/kg. Properties of NH_3 (datum – 40°C.)

Temperature (°C)	Liquid heat (kJ/kg)	Latent heat (kJ/kg)	Entropy of liquid (kJ/kg)
25	298.9	1167.1	1.124
– 5	158.2	1280.8	0.630

Or

(b) Explain the various refrigerant used in cryogenic refrigeration system. Also discuss its significance.

14. (a) Why cryogenic temperature measurement is critical ? Comment. Also explain different methods used for it.

Or

(b) Compare the various insulations used in cryogenic systems.

(4 × 15 = 60 marks)

D 94736 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 804 C—ENERGY ENGINEERING AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Differences between renewable and non-renewable resources of energy.
2. Brief about the various renewable energy sources.
3. Explain about energy policies.
4. Write short notes on energy surveying.
5. Define: Energy cost. Brief about the same.
6. Compare Fluidized bed combustion with fluidized bed boilers.
7. List out the functions of various components involved in the Refrigerator.
8. Briefly explain the working principle of Heat Pump.
9. Define: Energy Management.
10. Write short notes on costing techniques.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (a) Explain the Green House effect with suitable examples and justification.

Or

(b) Illustrate with neat sketch on the effect of Global Warming on Environment.

Turn over

12. (a) Describe the Energy conservation in engineering and process industry.

Or

(b) Explain energy costing in Thermal systems with suitable examples and justification.

13. (a) Brief about waste heat recovery systems.

Or

(b) Discriminate the Wind Energy Collector and storage system with neat sketch.

14. (a) Describe the various Energy management principles with suitable examples.

Or

(b) Explain about the optimal target investment schedule with suitable applications.

(4 × 15 = 60 marks)

D 94735 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 804 A—MARKETING MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Distinguish between marketing and selling.
2. List the important aspects of marketing in the twenty first century.
3. Differentiate products from services.
4. With an example explain the purpose served by a strategic business unit (SBU).
5. With an example explain the diversification strategy used in marketing.
6. Do the market segments are mutually exclusive groups ? Justify your answer.
7. List any five types of market research.
8. What do you mean by primary reference group ?
9. List the factors deciding effective marketing communication.
10. Describe the advantages and limitations of personal selling.

(8 × 5 = 40 marks)

Part B

Answer any **one** *question from each module (15 marks)*

Module I

11. Explain the production, product, selling and marketing concepts with examples.
12. Explain the marketing characteristics of technological, economic, political and social drivers. Why they are called uncontrollable factors ?

Module II

13. Select (assume) appropriate product or service offered by a company and explain the corporate and divisional marketing strategy planning adopted by them.

Turn over

14. Explain the constituent elements of market mix and the strategies adopted.

MODULE III

15. With appropriate product choice, explain the steps followed in a market survey.

16. Explain the psychological factors influencing consumer behavior.

MODULE IV

17. Explain the process of market communication used to launch a new brand of cement.

18. Describe the factors to be considered in the mass media advertising.

(4 × 15 = 60 marks)

D 94734 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 803—OPERATIONS MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions from Part A.*
Each question carries 5 *marks.*

1. Distinguish between manufacturing and production.
2. Explain the features of make to stock production.
3. How standardization enables interchangeability ?
4. With a simple sketch, explain a product layout.
5. List any *five* advantages of FMS.
6. Explain the process of method study.
7. Explain the functions of inventory.
8. What do you mean by SPT rule in sequencing ?
9. List the reasons for the replacement of products and component parts.
10. Illustrate the concept "time-cost trade off" in project network analysis.

(8 × 5 = 40 marks)

Part B

Answer any **one** *question from each module*
Each question carries 15 *marks.*

Module I

11. Define productivity and explain the factors affecting productivity.
12. With the aid of graph, explain the stages of product life cycle and production strategies adopted in each stage.

Turn over

Module II

13. Describe the process type layout and explain the merits and demerits of it.

14. Explain the constituent elements of materials requirement planning (MRP).

Module III

15. With a sketch, explain a deterministic inventory model (saw tooth model) with simplistic assumptions and derive an expression for the economic order quantity.

16. Explain the assumptions of sequencing n jobs on 3 machines using Johnson's algorithm and state the conditions for solving it.

Module IV

17. Explain the steps of PERT methodology in detail.

18. Where do we use minimal spanning tree problems ? Explain a case with example.

(4 × 15 = 60 marks)

D 94733 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 802—POWER PLANT ENGINEERING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1 Explain with the help of neat diagram a regenerative cycle. Derive also an expression for its thermal efficiency.

2 List the advantages of the combined cycle.

3 What do you mean by super critical boilers ?

4 What is main purpose of the superheater ? What are the advantages of the superheated steam ?

5 What do you mean by the term critical pressure ratio ?

6 What do you mean by impulse turbine ? Explain with a neat sketch.

7 Explain about the axial flow turbines.

8 What are the types of tariffs used ?

9 What is are types of high pressure boiler ?

10 What are the advantages of nuclear powerplant ?

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*

11. (a) A simple Rankine cycle works between the pressures 28 bar and 0.06 bar, the initial condition of the steam being dry saturated. Calculate the cycle efficiency, work ratio and specific steam consumption.

Or

(b) In an open cycle constant pressure gas turbine air enters the compressor at 1 bar and 300K. The pressure of air after the compression is 4 bar. The isentropic efficiencies of the compressor and the turbine are 78% and 85% respectively. The air fuel ratio is 80 : 1. Calculate the power developed and thermal efficiency of the cycle if the flow rate of the air is 2.5kg/sec. Assume C_p = 1.005 kJ/kg and γ = 1.4 for air and Assume C_{pg} = 1. 147 kJ/kg and γ = 1.333 for gases. R = 0.287kJ/kg.k. Calorific value of fuel is 42000 KJ/kg.

Turn over

12 (a) Explain about various boiler draught types with neat sketches.

Or

(b) With a neat sketch explain about various boiler components and their location in thermal power plant.

13 (a) Dry saturated steam enters a steam nozzle at a pressure of 12 bar and is discharged to a pressure of 1.5 bar. If the dryness fraction of a discharged steam is 0.95 what will be the final velocity of steam? Neglect initial velocity of steam. If 12% of the heat drop is lost in friction, find the percentage of reduction in final velocity.

Or

(b) Brief about various types of cooling towers used with neat sketches.

14 (a) Explain about gas cooled reactor with neat sketch.

Or

(b) The peak load on a thermal power plant is 80MW. The loads having maximum demands of 30Mw, 20Mw, 15MW, 10Mw, and 12MW are connected to the power plant.

The capacity of the power plant is 95MW. The load factor is 0.6. Calculate :

I) The average load on the plant.

II) The energy supplied peryear.

III) The demand factor.

IV) The diversity factor.

(4 × 15 = 60 marks)

D 94732 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 14 801—MECHATRONICS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Describe the details about evolution of mechatronics ?
2. Explain about scope of mechatronics.
3. Describe the details about data presentation system ?
4. Describe about magnetic recorders.
5. Describe in detail about light indicators.
6. Describe about air relay and give example.
7. Explain about signals and standards.
8. Write about bistable and illustrate its applications.
9. Mention basic fluidic devices and its uses.
10. Explain in details about back pressure sensors.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (a) Describe in detail about fundamentals of control systems.

Or

(b) Illustrate the scope of mechanism.

12. (a) Explain about the visual display unit and liquid crystal display unity.

Or

(b) Describe about the alarm indicators and its applications.

13. (a) Describe about process of PI and IP converters.

Or

(b) Explain about the flapper nozzle and its function.

14. (a) Explain the detail about stepping motors and its applications.

Or

(b) Illustrate principles of fluid logic controls.

(4 × 15 = 60 marks)

D 94731 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Information Technology

IT 14 805 E—NETWORK ADMINISTRATION AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten :

1 Explain configuration in the functions of network management.

2 Explain the network monitoring tool that is capable of monitoring the status of device with SNMP and list its key features.

3 Explain in brief on commercial tools for network management.

4 With the aid of flowchart, explain the structure of management information in SNMP.

5 List the advantages and disadvantages of SNMP monitoring with PRTG.

6 Explain RMON with an example.

7 Illustrate the benefits and functions of ARM network management.

8 What are the common tasks included in user manager for domains in windows NT administration tools ?

9 Explain in brief about the different types of network configuration. Explain any *one* in detail.

10 What are the advantages of debugging over a network compared to other debugging connectivity ?

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 (a) Explain the functions of Network management in detail.

Or

(b) Design a network security policy for a small organisation.

12 (a) (i) What are the basic SNMP components and their functionalities ? Explain with tree. diagram. (10 marks)

(ii) List the SNMP basic commands. (5 marks)

Or

(b) Explain SNMPv3 architecture and how it is explained with Transport Layer Security Transport Model (TLSTM).

13 (a) What are the things that are identified in RMON alarm and explain alarm table and jnxRMON alarm table ?

Or

(b) Explain the management functional areas associated with TMN conceptual model.

14 (a) Explain in detail about the various types of user accounts related to the network management.

Or

(b) (i) Suggest how to troubleshoot the security policy related issues using debugger ? (7 marks)

(ii) What are the common network policy threats and suggest some methods to safeguard a company from threats ? (8 marks)

[4 × 15 = 60 marks]

D 94726 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Information Technology

IT 14 804 D—MANAGEMENT INFORMATION SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. What is a System ? Which of the following are systems ? Justify the answer.
   a) A house ; and
   b) A cricket team.
2. How does the electronic mailing system change the nature of managerial work ?
3. What is information partnering ? Give examples.
4. Differentiate analog and digital transmission.
5. Draw a network using star topology and explain its features.
6. List the types communication media used for transmission.
7. Write the types of office automation system.
8. Mention the benefits of Decision support system.
9. Compare end/means analysis and critical success factor approaches.
10. Provide an example for a vulnerable system.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

1 A) Explain how information technology can be used to address the competitive forces.

Or

B) Describe the steps followed in systems approach for problem solving.

Turn over

2. A) Explain the software used for Wide Area Network (WAN).

Or

B) Describe the network topologies used for Local Area Network (LAN).

3. A) Explain the steps involved in Transaction Processing System.

Or

B) Elaborate on the models of Decision Support system.

4. A) Using an example, explain how critical success factors help managers to define their information needs.

Or

B) Elaborate on steps involved in designing information system (Systems Development Life Cycle).

(4 × 15 = 60 marks)

D 94725 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Information Technology

IT 14 803—NATURAL LANGUAGE PROCESSING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Mention the examples for dialogue based applications.
2. List the properties of representation languages used for natural language processing.
3. What are the different classes of verbs ? Give examples.
4. Give examples for adverbial and adjective phrases.
5. How is slot-value notation different from the simple list notation for syntactic trees ?
6. What is knowledge and knowledge representation ?
7. Compare procedural and declarative knowledge.
8. What are the different types of logic ?
9. State the properties of search algorithms.
10. Write the features of production systems.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

1. A Elaborate on different applications of natural language processing.

Or

B Describe the organization of Natural Language Processing systems.

2. A Consider the following grammar rules :

S ← ADJS
S ← NOUN
ADJS ← ADJS ADJ
ADJS ← ADJ

a) What happens to the top-down depth-first parser operating on this grammar trying to parse the sentence red red ?

b) What happens to a top-down breadth-first parser operating on the sentence red house ?

Or

B Write an ATN fragment that will successfully allow the following phrases :

a) Half past four ; and

b) Seven thirty five.

But does not permit the following :

a) Half to eight ; and

b) Ten forty five after six.

3. A Draw a block diagram for the forward and backward representation of knowledge and explain.

Or

B Describe the features of production systems.

4. A Illustrate the working of constraint propagation algorithm.

Or

B Elaborate the architecture of the black board model.

(4 × 15 = 60 marks)

D 94724 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE EXAMINATION, NOVEMBER 2020

Information Technology

IT 14 802—MOBILE COMMUNICATION SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. List the various performance metrics used to make the decision with reference to handoff.
2. What are the key differences between first and second generation systems ?
3. Explain about the GSM speech coding.
4. Draw the diagram of IEEE 802.16 Protocol stack.
5. Explain in detail about spread spectrum techniques.
6. How can the encapsulation be performed in mobile-IP ? Explain.
7. Mention the different entities in a mobile IP.
8. List the five components for developing an android application.
9. Draw the Structure of Fragment Lifecycle.
10. Describe the attributes of android layout.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Draw a neat diagram of GSM network architecture and explain with details of various types of interfaces.

(15 marks)

Or

Turn over

12. a) Draw and explain IS-95 reverse link transmission. (8 marks)

b) List the advantages and disadvantages of CDMA. (7 marks)

13. Explain in detail about Bluetooth Technology IEEE802.15 in detail with the layers. (15 marks)

Or

14. Describe the functions of MAC and Physical layer of IEEE 802.16 in detail. (15 marks)

15. a) Explain in detail the Dynamic host configuration protocol. (8 marks)

b) Describe IPV6 in detail with its extension headers. (7 marks)

Or

16. Discuss in detail how packets are routed in MANET using Dynamic source routing algorithm. (15 marks)

17. State and Explain various stages of android activity Lifecycle. (15 marks)

Or

18. List and Explain various types of layouts in android. (15 marks)

[4 × 15 = 60 marks]

D 94722 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS/IT 14 805 D—WEB PROGRAMMING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Differentiate HTML and DHTML.
2. Write the rules of a well formed xml document.
3. Give a brief note on the building blocks of DTD.
4. Write a cgi script to receive values using GET method.
5. What are scalar variables in peri.
6. Specify the features of java beans.
7. Create ContactForm.jsp with three input fields (name .address,contact number)
8. Write a PHP program to print the following in a table.

Salary of Mr, A is	1000$
Salary of Mr, B is	1200$
Salary of Mr. C is	1400$

9. Write a PHP program to remove duplicates from a sorted list.

   Input : (1, 1, 2, 2, 3, 4, 5, 5)

   Output : (1, 2, 3, 4, 5)
10. Write an AJAX code to request data from the server and display it.

(8 × 5 = 40 marks)

Part A

Answer **all** *questions.*

11. (a) Write a CGI script for evaluating the questionnaire form submitted by the user.

Or

(b) Create an xml document to store the ship order details and xml scheme of the same.

Turn over

12. (a) Write a CGI script for downloading a file from server.

Or

(b) Write a peri program to read and write the contents from and to the file.

13. (a) Write a JSP program to display the employee details (Empid, fname, Iname and age) from the database in table format.

Or

(b) Write a simple java bean class to model a book.

14. (a) Write a PHP code to record votes and write the details to a file.

Or

(b) Write a program to save the form data in text file using PHP.

(4 × 15 = 60 marks)

D 94721 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS 14 805 C—MACHINE LEARNING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. What is of inductive bias ? What is its significance ?
2. What is activation function in an artificial neuron ? Give an example.
3. Define the version space of a binary classification problem and illustrate it with an example.
4. Write a note of belief networks.
5. Write a note on k-nearest neighbor classification.
6. Give a generic algorithm for inductive logic programming.
7. Explain Vapnik-Chervonenkis dimension.
8. Give an algorithm for clustering.
9. Write a note on delayed-reinforcement learning.
10. Write a note on deductive learning.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (A) Describe the applications of machine learning in any three different domains.

Or

(B) Describe in detail about learning input-output functions in machine learning.

12. (A) Explain the backpropagation algorithm for training feed forward networks.

Or

(B) Describe candidate elimination method with an example.

Turn over

13. (A) Explain an algorithm for learning univariate decision trees.

Or

(B) Write in detail about probably approximately correct learning. Give an example of a PAC learnable concept class.

14. (A) Explain in detail about Q-learning.

Or

(B) Describe in detail about temporal-difference learning.

(4 × 15 = 60 marks)

D 94720 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS 14 805 B—CLOUD COMPUTING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. List the benefits of cloud computing.
2. Define private, public and hybrid clouds.
3. Compare grid computing and cloud computing.
4. Define Hypervisor. Explain hypervisor design approaches.
5. What are the advantages of computing on demand terminology ?
6. Write note a on cloud application planning.
7. What is meant by logical partitioning (LPAR) ? List the categories of LPAR.
8. Write a note on cloud performance monitoring commands.
9. Explain resource provisioning in cloud computing.
10. Write a note usage reporting and billing.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. a) Explain the role of virtualization in cloud computing.

Or

b) Explain cost factor and benefits associated with measured service.

Turn over

12. a) Explain various services offered by cloud.

Or

b) Explain the conceptual cloud model.

13. a) Explain how x86 architecture is virtualized.

Or

b) Explain server virtualization and storage virtualization.

14. a) Explain information storage, retrieval, archive and protection in cloud computing.

Or

b) Explain Amazone web services, in detail.

(4 × 15 = 60 marks)

D 94719 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS 14 805 A—ADVANCED DATABASE DESIGN

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Explain the various object oriented concepts.
2. Compare relational and object oriented databases.
3. Write notes on Distributed database.
4. Explain the process of concurrency control.
5. What are the functionalities of deductive database ?
6. Write short notes on multimedia databases.
7. Describe the major tools used in Oracle.
8. Write a note on mobile databases.
9. Discuss the Microsoft access features.
10. Explain the significance of digital libraries.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11 a) Design an OO schema for air reservation system. Construct the scheme using EER, and create classes using ODL.

Or

b) Compare the functionalities of extended relational and object relational databases in detail.

Turn over

12 a) Explain the query processing mechanism in distributed databases.

Or

b) Consider the following relations :

BOOK(Book No., Primary_author, topic, total stock, price)

BOOKSTORE(Store_No., city, state, zip, inv_value)

STOCK(Store#, Book#, Qty)

total_stock is the total number of books in stock, inv_value is the total inventory value for the store in dollars.

(a) Give an example of 2 simple predicators that would be meaningful for the BOOKSTORE relation for horizontal partitioning.

(b) How would you derive horizontal partitioning of STOCK be defined based on the partitioning of BOOKSTORE ?

(c) Show predicates by which BOOKS may be horizontally partitioned by topic.

13. a) Explain the mobile databases and multimedia databases in detail.

Or

b) Describe the process involved in data warehousing and data mining.

14. a) Explain the Microsoft access features and functionality of access in detail.

Or

b) Describe the working of Oracle's distributed databases in detail.

(4 × 15 = 60 marks)

D 94717 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS 14 804 C—CYBER SECURITY

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Explain the significance of network security.
2. Describe the pitfalls of Security Handshake.
3. Describe the various web issues.
4. What are the various web security considerations ?
5. List the security services available for e-mail.
6. Describe the keys used in PGP.
7. Discuss the importance of intrusion detection.
8. Explain trusted systems in brief.
9. What is authentication ? Explain its need.
10. What is salt value ? How is it used in passwords ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. a) Explain the symmetric and asymmetric keys.

Or

b) Explain Kerberos in detail with a special note on its role in providing security.

12. a) Explain the Oakley Key Determination Protocol.

Or

b) Explain in detail the process of key management.

13. a) What are the advantages of PGP ? Give the flow diagram for message transmission between the transmitter and receiver side.

Or

b) Explain the process of securing an e-mail from the time of its origin in sender side to its reception at the destination.

14. a) Explain the various password selection strategies.

Or

b) Write in detail about the working mechanism of HIDS and NIDS.

(4 × 15 = 60 marks)

D 94716 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS/IT 14 804 B—INFORMATION RETRIEVAL

Time : Three Hours Maximum : 100 Marks

Part A

Write any **eight** *questions.*
Each question carries 5 *marks.*

1. Differentiate Data retrieval and Information retrieval.
2. Define the Formal Characterization of IR Models.
3. Write notes on the Ad-hoc retrieval Filtering.
4. Differentiate between Recall and Precision in Information Retrieval evaluation.
5. Briefly explain XML and its applications.
6. Write notes on signature files.
7. Explain the working of centralized web-crawler with a neat diagram.
8. Define Software agents with two examples.
9. Write notes on multimedia Indexing.
10. Discuss about Cross-talk problem in histograms of colour images.

(8 × 5 = 40 marks)

Part B

Write **all** *questions.*
Each question carries 15 *marks.*

1. A) Explain the logical view of document with the help of a neat diagram.

Or

B) Explain the following classical models for Information Retrieval :

a) Boolean Model.

b) Vector Model.

c) Probabilistic Model.

Turn over

2. A) Write notes on the Reference collections available for the evaluation of IR models.

Or

B) Explain Keyword based Querying with suitable examples.

3. A) Briefly explain sequential searching techniques.

Or

B) Explain the mechanism of Inverted Files. Write the steps in Searching in Inverted files.

4. A) Explain how the Generic Multimedia object Indexing approach (GEMINI) is used for multimedia Indexing.

Or

B) Explain the different architectures of web crawlers.

(4 × 15 = 60 marks)

D 94715 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS 14 803—DATA MINING AND WAREHOUSING

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten :

1 Explain any two data reduction techniques used in data preprocessing.

2 Differentiate operational database and data ware house. Why should we have a separate data warehouse ?

3 Elucidate the OLAP operations in a Multidimensional database.

4 Explain outlier evaluation criteria for a classification method.

5 Write and explain nearest neighbor classification algorithm.

6 Explicate constraint based association rule mining.

7 Detail how association rules are generated from frequent item sets and the ways of improving the efficiency of Apriori algorithm.

8 Discuss the categorization of major clustering method.

9 Explain how data mining is applied for the classification of web documents.

10 Detail the role of data mining in bioinformatics data analysis with a case study.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 Discuss in detail about the different kinds of data , the data mining task can be prepared.

Or

12 Explain in detail the different kinds of pattern that can be mined using data mining techniques.

13 Demonstrate how Bayesian classification helps in predicting class membership probabilities.

Or

14 Explain Decision tree induction classification with an example.

Turn over

15 Elaborate the concept of mining multilevel association rules from relational databases.

Or

16 What is Association Rule mining ? Give the Apriori Algorithm. Apply the algorithm to find all frequent item sets from Table 1 ? Assume your own threshold support count and minimum confidence :

Table 1

TID	items-bought
T100	1, 3, 4, 6
T200	2, 3, 5, 7
T300	1, 2, 3, 5, 8
T400	2, 5, 9, 10
T500	1, 4

17 Explain K-mean clustering algorithm ? Suppose the data for clustering is {1, 3, 5, 15, 23, 11, 25}. Consider $k = 2$, cluster the given data using above algorithm.

Or

18 Explain the usage of data mining in mining multimedia data on the web and the mining of web usage.

(4 × 15 = 60 marks)

D 94714 **(Pages : 2)** **Name.....**

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS 14 802/IT 14 804 C—DISTRIBUTED SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. State the goals of distributed systems.
2. Explain the categories of middleware.
3. Describe self-management in distributed system.
4. Enunciate on events and notifications.
5. What is transient and persistent communication ?
6. What is clock synchronization in distributed systems ?
7. Describe directory services.
8. Explain optimistic concurrency control.
9. Briefly explain distributed objects.
10. How is reliable group communication achieved ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

11. (a) Explain in detail the different types of virtualization.

Or

(b) State the reason for code migration. Describe the various approaches to it.

12. (a) Explain in detail about structured naming.

Or

(b) How to ensure QoS in stream oriented communication ?

13. (a) Describe Maekawa's mutual exclusion algorithm.

Or

(b) State the purpose of election algorithms. Explain in detail about bully algorithm.

14. (a) Enunciate on two phase and three phase distributed commit protocols.

Or

(b) How is the malicious group member in distributed system handled ?

(4 × 15 = 60 marks)

D 94713 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Computer Science Engineering

CS/IT 14 801—COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Write about the classification of Instruction Set Architectures (ISAs).
2. Sketch the basic functional units of a computer and explain each one's functionality.
3. Define Pipelining. When is it used ? Mention its advantages.
4. What is meant by Instruction Level Parallelism ? Explain.
5. How dynamic scheduling is implemented ? Give an example.
6. Write about the multiple issue of instructions.
7. Explain about the Crosscutting Issues in the Design of Memory Hierarchies.
8. Write a note on the performance measures used in an I/O system.
9. Explain about the models of memory consistency in detail.
10. Explain the procedure involved in designing interconnection networks.

(8 × 5 = 40 marks)

Part B

11. A) Explain the various addressing modes with an example for each.

Or

B) Write in detail about pipelining with multicycle operations.

12. A) Explain about vector architecture in detail.

Or

B) Explain in detail about the compiler and hardware support for ILP.

Turn over

13. A) Describe about the working principles of the Virtual memory and its protection mechanism.

Or

B) Explain the I/O System design in detail.

14. A) Explain the working of multiprocessors in detail.

Or

B) With a neat sketch, explain the distributed shared memory architecture.

(4 × 15 = 60 marks)

D 94701 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 805 E—ENVIRONMENTAL POLLUTION CONTROL ENGINEERING

Time : Three Hours Maximum : 100 Marks

Part A

I Answer any *eight* questions. Each question carries 5 marks :

1 Discuss on the effects of radioactive materials as a cause of pollution.

2 List the quality parameters of water.

3 Write about primary and secondary pollutants.

4 Write about carbon monoxide and the sources of it.

5 Briefly discuss on gas adsorption, absorption and combustion.

6 State the characteristics of light.

7 Specify the ecological aspects of vegetation.

8 State the ecological factors in plant site selection.

9 Discuss on the factors to be considered for chimney heights with regard to pollution.

10 Discuss Bhopal gas tragedy.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 Describe the role of waste water treatment as a measure to control pollution.

Or

12 Elucidate on thermal pollution and underground disposal.

13 Enunciate on the procedures to control gases and vapours.

Or

14 Discuss on the air pollution control strategy.

Turn over

15 Elucidate on the corrective of light and glare pollution.

Or

16 Describe the causes and effects of noise pollution.

17 Explain the physical, social aesthetic and economical assessment of coal mines.

Or

18 Elucidate on the land pollution control act in India.

(4 × 15 = 60 marks)

D 94700 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 805 D—GROUND IMPROVEMENT TECHNIQUES

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Discuss the objectives of ground improvement techniques.
2. Write a brief note on stone column.
3. What is meant by soil stabilization ? What are the requirements of soil stabilization ?
4. Discuss the effect of lime on physical and engineering properties of soil.
5. Explain physical and strength properties of geotextile.
6. Briefly discuss on application and limitation of jet grouting.
7. Write a note on reinforced embankment.
8. How to improve soil properties using reinforced elements ?
9. Discuss the application of geotextiles in road.
10. Explain about dynamic compaction of sands.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions.*
Each question carries 15 *marks.*

11. (a) Explain the blasting technique of improving cohesionless soil with its limitations.

Or

(b) List the methods employed to improve soft clay soils. Explain in detail preloading techniques with neat sketches.

Turn over

12. (a) Explain the method of cement stabilization of soil.

Or

(b) Explain in detail about different grouting materials.

13. (a) Explain the types of geogrid.

Or

(b) What is meant by geotextile ? Explain the behaviour of soils on reinforced with geotextile.

14. (a) Explain the load transfer mechanism and strength development of reinforced earth walls.

Or

(b) Write an explanatory note on soil improvement using natural reinforcing material.

(4 × 15 = 60 marks)

D 94697 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 804 D—URBAN TRANSPORTATION PLANNING

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten :

1 What is Transportation Planning ? Which are the objectives and goals of the transportation planning ?

2 List out the types of data required for Transportation planning.

3 What is the travel demand forecasting ? Discuss transportation demand and analysis.

4 Explain multiple linear regression analysis.

5 Explain in detail calibrating gravity model.

6 Explain in detail uniform growth factor and average growth factor method of trip distribution.

7 Give a comparison between direct generation usage mode and trip interchange usage mode ?

8 What is trip assignment ? Enlist various methods of trip assignment ? Explain minimum path with capacity restraint ?

9 Illustrate with an example about root split analysis method.

10 State the limitation for the conventional approach to activity based model.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 Explain different levels of urban Transportation Planning stages of with sketch.

Or

12 What are the factors affecting travel demand ? Explain sequential model in travel demand.

Turn over

13 Enlist the factors affecting the Route choice. Explain TRC trip assignment model.

Or

14 Explain with example category analysis for trip generation analysis.

15 Explain opportunity Model. Derive the equation for the trip distribution by opportunity model.

Or

16 Explain aggregate and disaggregate approaches to travel demand forces in engineering frameworks.

17 Write about characteristics of Rail transit. Also, write about capacity, fare structure and route planning for rail transit in brief.

Or

18 Describe the characteristics of finding the shortest path by using Dijkstras algorithms.

(4 × 15 = 60 marks)

D 94696 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 804 C—SURFACE HYDROLOGY AND WATER POWER

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. (a) What are the types of precipitation ?

   (b) State the reasons for water scarcity in Kerala.

   (c) How unit hydrograph for ungauged catchments are derived ?

   (d) What are the uses of S-curve hydrograph ?

   (e) Brief about the terms flood frequency and recurrence interval.

   (f) What are called hydrologic flood routing ?

   (g) How design flood is differ from standard flood ?

   (h) Brief about the types of hydro power scheme.

   (i) Distinguish between load factor and capacity factor in hydro power plant.

   (j) The fall at a canal regulator is 10 m and the discharge available through turbines is 60 cumec. If the overall efficiency of the turbine is 80 %, find the available power potential.

(8 × 5 = 40 marks)

Part B

Answer any **one** *full question from each module.*
Draw sketches and assume suitable data wherever necessary.
Each question carries 15 *marks.*

2. (a) Narrate the methods of rainwater harvesting practised in Kerala.

Or

   (b) Derive the equation of Horton's infiltration capacity curve.

3. (a) State the unit hydrograph theory with the assumptions made for the derivation of unit hydrograph.

Or

   (b) How will you estimate the yield from the reservoir using mass curve ?

Turn over

4. (a) Describe about the Log-normal distribution method of flood estimation.

Or

(b) Distinguish between reservoir routing and channel routing.

5. (a) Describe about the role of power house and tail race in hydroelectric power plants.

Or

(b) What are characteristics curves of turbines ? Explain.

(4 × 15 = 60 marks)

D 94695 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 803—CONSTRUCTION ENGINEERING AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Briefly outline the three time estimates and their significance.
2. Discuss the steps involved in resource leveling.
3. Indicate the different parameters considered for coding system. Give examples.
4. Draw pile driving equipment and mark all the components.
5. Write the roles and responsibilities of arbitrator.
6. Compare earnest money deposit with security deposit.
7. How the direct cost and indirect cost influence total project cost ?
8. What is meant by economic order quantity ? What are the costs involved to estimate economic order quantity ?
9. State the importance of professional ethics in managing contraction projects.
10. Represent the merits of computerized information system.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

Each question carries 15 *marks.*

11. Draw the network for the given project. Find the possible paths and Critical path. Calculate Earliest Start Time (EST), Earliest Finish Time (EFT), Latest Start Time (LST), Latest Finish Time (LFT). Also find total float :

Activity	A	B	C	D	E	F	G	H	I	J	K
Node	1–2	1–3	1–4	2–5	3–5	3–6	3–7	4–6	5–7	6–8	7–8
Duration	2	7	8	3	6	10	4	6	2	5	6

Or

12. Construct network and determine the optimum time and cost for given data :

Activity		1–2	1–3	1–4	2–4	2–5	3–4	4–5
Normal	Time in days	4	2	6	5	7	2	4
	Cost in Rs.	60	38	150	150	115	100	100
Crash	Time in days	3	1	4	3	5	2	2
	Cost in Rs.	90	60	250	250	175	100	240

Days	15	14	13	12	11	10	9	8	7	6
Indirect Cost in Rs.	600	500	400	250	175	100	75	50	35	25

13. Describe the different earth work excavation equipment used in construction field with neat sketches.

Or

14. (a) Identify the various possibilities to arise disputes in construction works. (8 marks)

(b) Illustrate the methods of solving construction disputes. (7 marks)

15. (a) Draft the model notice inviting tender by considering all parameters. (8 marks)

(b) Discuss the important condition of contract with suitable examples. (7 marks)

Or

16. Explain the method of preparation of budget for construction project.

17. (a) Do ABC analysis for the items shown in the Table. Also find how many items are in A, B, C category :

Item Code	Cost/ Piece (Rs.)	Annual Usage (units)
1	7	42000
2	11	190000
3	10	6000
4	5	120000
5	14	8000
6	7	200000
7	8	19000
8	6	85000

(10 marks)

(b) Discuss the various safety rules followed in construction work to avoid accidents. (5 marks)

Or

18. Describe the importance and roles of project management information system.

[4 × 15 = 60 marks]

D 94694 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 802—QUANTITY SURVEY AND VALUATION

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten. Each question carries *5* marks :

1 Discuss about quantity surveying also list out its types.

2 Roll out the difference between revised estimate and supplementary estimate.

3 Identify the application of year's purchase.

4 Describe the difference between analysis of rate and quantity estimation.

5 For what purpose the rate analysis is important in quantity surveying.

6 What is E-Tender ?

7 How would you overcome the over head cost ?

8 Define Sinking fund.

9 What are the various methods of depreciation ?

10 Write down the purpose of valuation.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions. Each question carries 15 marks.

11 Work out the quantities of materials required for the following works :

(a) First class brick work in cm 1 : 5 – 1 m^3. (7½ marks)

(b) Plastering in cm 1: 6, 12 mm. thick - 10 m^2. (7½ marks)

Or

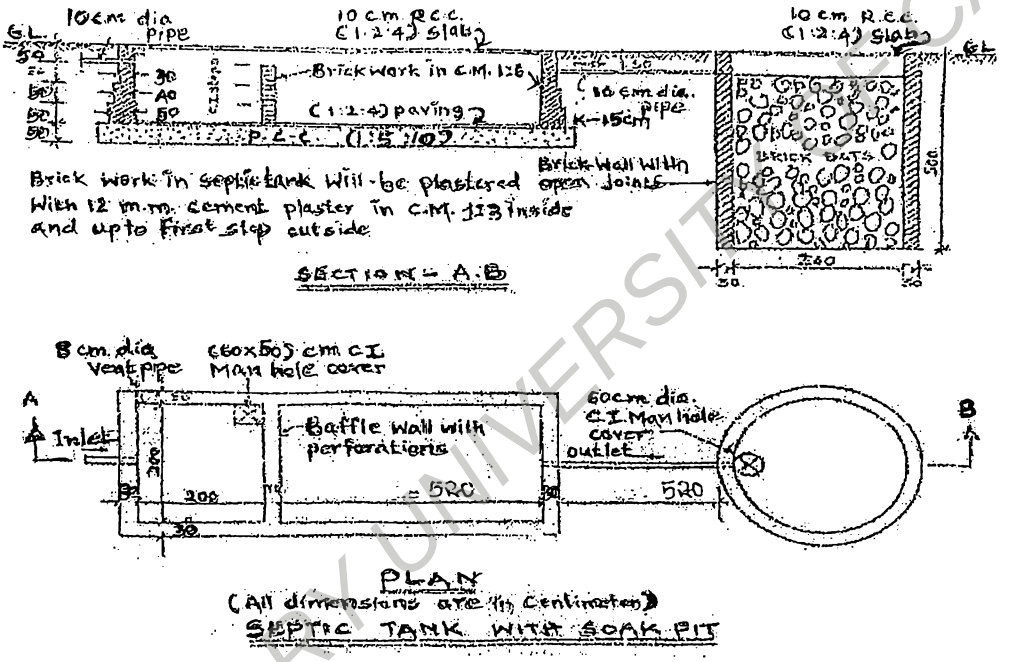
12 Explain the various types of estimates for a building.

13. Estimate the quantity of following items of Septic tank :

(i) Earth work excavation. (5 marks)

(ii) P.C.C. 1 : 5 : 10. (5 marks)

(iii) Brick Bats in soak pit. (5 marks)



Or

14. Prepare the detailed schedule of reinforcement for a beam having 8m and cross section of 0.6 m. depth and 0.3 m. and assume clear cover as 25 mm. Use 5 numbers of 25 mm. dia bar as main reinforcement (includes cranked bar), 2 numbers of 20 mm dia bar as hanger bar and 8 mm. dia bar as stirrups at 180 mm. c//c. Draw the detailed cross sectional views at the mid and end of the span. Assume that the bars were cranked at effective span / 2.5 m. from support.

15. Analyse the rate of following works.

    (a) 10 cu.m. of brickworks in superstructure in 1 : 4 CM. (7½ marks)

    (b) 10 cu.m. of 1 : 2 : 3 Cement concrete. (7½ marks)

Or

16. Explain in detail about the different types of general specifications.

17. (a) Write a report to accompanying an estimate for a village water supply scheme. (7½ marks)

    (b) Elaborate in detail how you will work out standard rent of a government building. (7½ marks)

Or

18. What are the points to be considered in the report writing and explain the residential building report?

[4 × 15 = 60 marks]

D 94693 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 14 801—ENVIRONMENTAL ENGINEERING—II

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten :

1 What are the materials used in the construction of sewers ?

2 How to determine storm sewage flow ?

3 Give an account on siphon spillway.

4 Explain oxidation in ponds.

5 Compare skimming and sedimentation tanks.

6 List the biological characteristics of sewage.

7 Mention the ways to dispose sewage by irrigation.

8 State the characteristics of solid wastes.

9 Specify the various methods to collect solid waste.

10 What are processing of solid waste ?

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 Enumerate the various sewer appurtenances with neat sketch.

Or

12 Describe the design of manholes and grease traps.

13 Summarize the objectives of sedimentation tanks.

Or

14 Construct the design of screen chamber.

Turn over

15. Explain the need for sludge dewatering and its methods.

Or

16. Explain connection of house drains.

17. Discuss on the various methods of disposal of solid wastes.

Or

18. Explain the types of pollutants.

(4 × 15 = 60 marks)

D 94677 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Biomedical Engineering

BM 14 803—BIOMATERIALS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Describe the classification of biomaterials.
2. List the advantages and applications of Stainless steel.
3. Identify the materials suitable for fabricating heart valves and explain its features and limitations.
4. Describe the need, types and applications of skin implants.
5. Discuss the formation, composition and structural properties of polyamides that makes it suitable for medical applications.
6. Describe the types of materials used as dialyser membranes.
7. With a suitable stress stain curve explain the mechanical properties of bone.
8. Explain the strengthening mechanism of ceramics.
9. Outline the challenges in the evaluation of biocompatibility.
10. Discuss how Systemic toxicity test is being carried out to assess the biocompatibility of implants.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Classify cobalt-based alloys on the basis of their composition with their properties.

Or

12. Discuss the classification, composition, advantages, limitations and applications of dental implants.

Turn over

13. Discuss the role of biopolymers in controlled drug release.

Or

14. Enumerate the formation of polymers and its types.

15. Elaborate the strengthening mechanism of metals with suitable examples.

Or

16. Discuss about biomaterial which is used to make internal fracture fixation devices.

17. Outline the various effects of host material response.

Or

18. Discuss the standards for Bio-compatibility testing. Why is carcinogenicity and chronic toxicity studies important in the bio-compatibility testing ? Explain how they are conducted.

(4 × 15 = 60 marks)

D 94661 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, NOVEMBER 2020

Automobile Engineering

AM 14 805 C—FLEXIBLE MANUFACTURING METHODS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. What are the advantages of CAD ?
2. Give the list of computer hardware components.
3. Enumerate the important output devices used in CAD.
4. What is a part program ? What are the methods of part programming ?
5. What are the following G Functions for a NC machine ?
   G00, G01, G02, G03, G04.
6. Define a robot. Write a short note about robots.
7. What does component attributes coded in the MICLASS system denote ?
8. What is meant by part family ? What are the methods for grouping components into part family ?
9. Write a short note on FMS design.
10. State the need and applications of simulation.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. With neat sketch describe the applications of computer for design.

Or

12. With neat sketch explain in detail about input devices of computer.
13. Describe in detail about NC motion control system.

Or

14. Explain in detail about punched tape coding and format.

Turn over

15. Discuss about OPTIZ coding system generally used in group technology in detail.

Or

16. Explain the common methods used in programming robots.

17. Describe in detail about FMS control software.

Or

18. Explain in detail about controlling precision in FMS.

(4 × 15 = 60 marks)

D 94654 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2014 SCHEME) EXAMINATION, NOVEMBER 2020

Automobile Engineering

AM 14 803—QUALITY ENGINEERING AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Briefly explain about Management commitment.
2. What is the estimated cost of poor quality in U.S. industry ?
3. Discuss the significance of customer satisfaction and retention.
4. Write the importance of line and bar graph.
5. Write short notes on : ISO 14000.
6. Briefly explain about affinity diagram.
7. What is measure of central dispersion ?
8. Write a short notes on : P chart and u chart.
9. Briefly explain about acceptance sampling.
10. Confer the term - MTBF.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Explain in detail about Crosby's quality treatment.

Or

12. Write a short notes on :
    (i) Employee empowerment ; and
    (ii) Juran's trilogy.

Turn over

13. With neat labeled sketch explain the control chart and scatter diagrams.

Or

14. Does ISO 9000 contain product standards or standards for operation of a quality management system ? Explain the difference.

15. With an example explain about control c-chart for non-conformities analysis.

Or

16. With neat sketch explain about Normal probability distribution.

17. With neat sketch explain about Stratification process.

Or

18. Confer the term :

    (i) Life testing. (7 marks)

    (ii) Sampling *Vs* Inspection. (8 marks)

[4 × 15 = 60 marks]

D 94649 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME/PTME 09 804 L22—QUALITY ENGINEERING AND MANAGEMENT

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Define Quality.
2. What are the general requirements of Quality Management System ?
3. What is a control chart ?
4. State the statistics applications of statistical techniques.
5. What is acceptance sampling method ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. What is quality cost? Explain the techniques used for quality cost.
7. Briefly explain the steps involved in continuous improvement process.
8. What are the characteristics of empowered employee? Also discuss the benefits of empowered environment.
9. What is Bench Marking ? Explain its types.
10. Describe the details of construction of *p*-chart.
11. Briefly explain the significance of OC curve for life testing.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) With suitable example, discuss the general requirements of Quality Management System.

Or

(b) Explain employee involvement and empowerment

13. (a) Discuss the benefits of ISO 14000 certification in manufacturing industry.

Or

(b) Describe the various elements of ISO 9000 : 2000 quality system.

14. (a) With a suitable example, discuss the random and assignable causes of variations.

Or

(b) Explain the uses Control charts for attributes for p, np, c and u charts.

15. (a) Discuss the distribution used in acceptance sampling.

Or

(b) Define reliability, and explain the concept of reliability.

(4 × 10 = 40 marks)

D 94648 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME/PTME 09 804 L18—HEATING, VENTILATION AND AIR CONDITIONING DESIGN

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. List any four properties of refrigerants.
2. Define one tone of refrigeration.
3. What is the role of an expansion valve ?
4. How do you classify air conditioning systems ?
5. What is meant by dew point temperature ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. What is meant by a hermitically sealed compressor ? How rotary compressors are classified ?
7. An electric heater is used to heat air at 25°C to 70°C. Flow required is 200 litres per minutes. Intake air is of 85 % Relative humidity. Calculate the rating of the heater.
8. In mixing chamber, 0.25 kg/s moist air of 20 % RH at 50° DBT and 0.4 kg/s moist air at 30° C and 0.0178 kgW/kgda are adiabatically mixed. The mixed air is electrically heated to 45°C. Find out the final temperature and RH of the mixture.
9. Explain the terminology used in winter AC.
10. Explain the purpose of flash intercooler in two stage compression system.
11. How does the COP of a heat pump and refrigerator differ ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 10 *marks.*

12. (a) If the moist air at one atm records a DBT of 28° C and WBT of 24° C, calculate the following : a) RH ; b) Specific humidity ; c) Partial pressure of water vapor ; d) DPT ; e) Density of water vapor in the mixture ; f) Density of dry air ; and g) enthalpy of moist air.

Or

(b) If the atmospheric pressure is 740 mm of Hg and the DBT is 32° C and WBT is 21° C, find out, i) RH ; ii) Specific humidity ; iii) DPT ; iv) Density ; and v) Enthalpy of moist air.

13. (a) Describe the functioning of a) thermodynamic steam trap ; and b) scroll compressor with the aid of sketches.

Or

(b) Describe the arrangement of overhead and flooded chillers and mention the merits and demerits of each.

14. (a) A room of size 10 meter wide, 45 m long and 5 m height is to be air conditioned. The length is oriented in the East - West direction. The design conditions are : i) Outdoor condition, DBT is 32° C and WBT is 23° C, ii) Indoor condition is 25° DBT at 65 RH, Seating capacity is 220. iii) 5 wooden doors, (U = 1.5 W/m^2K) with size 2 m wide, 3 m height, 2 each on the north and south walls and one on eastern wall, iv) U Roof is 2 W/m^2K, U wall is 3 W/m^2K v) Fluorescent lamps of 40 W per 12 m^2 and 20 Ceiling fans of 80 W each are provided, vi) human heat release may be taken as 66 W sensible heat and 31 W latent heat per person, during working hours vii) infiltration may be taken as .6 air change per hour. Determine the total cooling load.

Or

(b) It is decided to maintain the DBT of a room at 23° C, with RH 60% . Outdoor conditions are 30 DBT and 22 WBT. Sensible heat gain for the room is 2×10^5 KJ/hr and latent heat gain is 0.5×10^5 KJ/hr. The ventilation requirement is 45 m^3/min and bye pass factor is 0.11. Calculate the outdoor air load, grand total heat, ESHF and ADP.

15. (a) What are the refrigeration problems found in association with food preservation ? Describe any *two* methods of defrosting of chillers.

Or

(b) i) What is a refrigerant and what the characteristics of it ?

ii) Enumerate the merits and demerits of ammonia as a refrigerant.

iii) Where do you find CO_2 refrigeration as most suitable ?

($4 \times 10 = 40$ marks)

D 94646 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME/PTME 09 803 L24—MARKETING MANAGEMENT

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *the questions.*
Each question carries 2 *marks.*

1. What is Marketing Management ?
2. List the planning activities performed by corporate headquarters.
3. What is marketing insight ?
4. Define Reach.
5. What is sales promotion ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Mention the importance of marketing.
7. How a value chain helps in identifying ways to create more customer value ?
8. Write about the barriers to use Marketing Research.
9. What are the eight communications mixes in communication modes ?
10. List the factors affecting advertising budget.
11. Distinguish between needs and demands. Write about the different types of needs.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (A) Describe the holistic marketing.

Or

(B) Explain the methods to build stronger brands.

Turn over

13. (A) Describe the process of establishing strategic Business units.

Or

(B) Explain about the planning for new businesses.

14. (A) Draw the block diagram of marketing Research process and explain.

Or

(B) Write about the psychological factors that influence buying behavior.

15. (A) Discuss about the characteristics of the marketing communications mix.

Or

(B) Brief on alternative media for advertising.

(4 × 10 = 40 marks)

D 94645 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME/PTME 09 803 L12/AM 09 804 L11—CRYOGENIC ENGINEERING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. List any four applications of cryogenics.
2. List the important properties of super conducting materials.
3. How cryogenics differs from ordinary refrigeration systems ?
4. How do you calculate regenerator effectiveness ?
5. What is meant by cryo pumping ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Discuss the changes in fatigue strength and impact strength of materials such as rubber or metals (with suitable graphs) in cryogenic temperature.
7. What are the different molecular forms hydrogen ? Describe them.
8. Do the heat exchangers are to be specially designed for the air liquefaction systems ? If so what changes are needed ?
9. Explain the process of liquefaction of air.
10. Explain different methods of thermal insulation in the cryogenic range.
11. How does the COP of a heat pump and refrigerator differ ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Discuss the features of a cryogenic rocket engine.

    (b) Discuss the applications of cryogenics in surgery and food preservation.

    Or

    (c) Give a chronological outline of the developments of cryogenics over the past decades.

    (d) How superconductivity finds applications in cryogenics ? Give examples.

13. Describe the Claude system with the schematic and T-S diagram.

    Or

    Describe the Philips refrigeration system with the schematic and T-S diagram.

14. What is adiabatic demagnetization ? Explain the process and mention few applications.

    Or

    Derive the COP of a heat pump and show it differs from that of a refrigerator.

15. What are the problems associated with the storage of cryogenic fluids ? Describe any two methods of storage of cryogenic fluids.

    Or

    Describe different types of heat insulations used in cryogenic systems.

(4 × 10 = 40 marks)

D 94644 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 09 802—COMPRESSIBLE FLUID FLOW

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

All questions are **compulsory**.

1. Define Mach cone and Mach angle.
2. Write the assumptions for a flow to be an isentropic.
3. Differentiate flow through constant and variable area duct.
4. Calculate the velocity, after a normal shock in supersonic flow with upstream conditions of u_1 = 680 m/s, T_1 = 228 K, P_1 = 1 atm., γ = 1.4.
5. Define critical condition in Fanno flow.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

1. Explain the zone of action and zone of silence under sonic flow condition.
2. A conical diffuser has entry and exit diameters of 15cm and 30cm respectively. The pressure, temperature and velocity of air at entry are 0.69 bar, 340 K and 180 m/s respectively. Determine : (i) The exit pressure ; and (ii) The exit velocity. Assume isentropic flow, γ = 1.4. C_p = 1.00 kJ/kg-K.
3. Air at a pressure of 3.5 bar, temperature 298 K and Mach number 2 is brought to sonic velocity in a frictionless constant area duct through which heat transfer can occur. Determine : (i) Final pressure and temperature ; and (ii) Heat added during the process.
4. The velocity of a normal shock wave moving into stagnant air (P = 1.0 bar, T = 25°C) is 570 m/s. If the area of cross section of the duct is constant, Determine : (i) Pressure and Temperature ; and (ii) Mach number imparted upstream of the wave front.

Turn over

5. Explain chocking in Fanno flow.

6. Air flows through a duct at a pressure of 0.1 MPa. With a velocity of 380 m/s. The temperature of the air is 50°C. Determine the isentropic stagnation pressure, temperature and density.

(4 × 5 = 20 marks)

Part C

1. (a) Derive momentum equation of one dimensional in viscid compressible flow through a control volume approach.

Or

(b) Explain the various regimes of flow with sketch.

2. (a) Isentropic flow of air takes place through a variable area duct. At one section the Mach number is 1.5 and further downstream the Mach number has increased to 2.8. Find the area ratio.

Or

(b) A supersonic nozzle expands air from P_0 = 25 bar and T_0 = 1050 K to an exit pressure of 4.35 bar. the exit area of the nozzle is 100 cm^2. Determine : (i) Throat area ; (ii) Pressure and Temperature at throat ; and (iii) Temperature at exit.

13. (a) Air at P_0 = 11 bar, T_0 = 420 K is supplied to a 45 mm diameter pipe. The friction factor for the pipe surface is 0.001. If the Mach number changes from 3.0 at the entry to 0.8 at the exit determine the : (i) Length of the pipe ; and (ii) Mass flow rate.

Or

(b) The stagnation temperature of air is raised from 85°C to 376°C in a heat exchanger. If the inlet Mach number is 0.4, determine : (i) Final Mach number ; and (ii) Percentage drop in pressure.

14. (a) A CD nozzle has an exit to throat area ratio of 2.0. Air enters the nozzle with a stagnation pressure and stagnation temperature of 650 kN/m^2 and 93°C. The throat area is 6.25 cm^2. Due to its operation at the off design condition a plane normal shock is seen to stand at a section where M = 1.5. Determine the : (i) Mach Number ; and (ii) Static pressure and static temperature at the exit of the nozzle. Assume isentropic flow before and after the shock.

Or

(b) Derive the equation for Mach number of upstream of the normal shock wave.

(4 × 10 = 40 marks)

D 94643 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Mechanical Engineering

ME 09 801—REFRIGERATION AND AIR CONDITIONING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *the questions.*
Each question carries 2 *marks.*

1. What is meant by Steam jet refrigeration system ?
2. Define : Vapour compression system.
3. Describe : RSHF and GSHF.
4. What is the function of duct ?
5. What factors to be considered while selecting a condenser ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Describe the working of Carnot refrigeration cycle.
7. Write short notes on Vortex tube refrigeration.
8. Explain working of Li-Br vapour absorption refrigeration system with neat sketch.
9. What is vapour absorption system? State how its efficiency can be improved ?
10. Explain the procedure for calculating cooling load due to infiltration air.
11. Explain Flooded type evaporator with neat sketch.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Define refrigeration, State the Name of different types of system used for cooling of aircraft cabin, Also Explain with schematic diagram Bootstrap air Refrigeration system.

Or

(b) A dense air refrigeration machine operating on Bell-Coleman cycle works between 3.4 bar and 17 bar. The temperature of air after the cooler is 15oC and after refrigeration is 6C, for a refrigeration capacity of 6 tons calculate :

(i) Temperature after compression and expansion.

(ii) Air circulation required in cycle per minute.

(iii) Work of compression and expansion.

(iv) Theoretical COP.

(v) Rate of water circulation required in the cooler in Kg/min. if rate of temperature rise is limited to 30°C.

13. (a) Explain the working of two stage compression with water intercooler and liquid sub-cooler employed for vapour compression system.

Or

(b) Explain the advantages of vapour compression refrigeration system over air refrigeration system. Also describe effect of sub-cooling.

14. (a) Room air at 20°C DBT and 50 % RH is mixed with outdoor air at 40°C DBT and 30 % RH in the ratio of 4 : 1. The mixture is passed through a cooling coil whose temperature is maintained constant at 10°C whose by-pass factor is 0.2. Determine the following : (i) Condition of air before entering the coil ; and (ii) Condition of air leaving the coil ; and (iii)Refrigeration load on the cooling coil when 250 m^3/min of air is supplied to the room.

Or

(b) 250 m^3/min of air at atmospheric conditions I2°C DBT and 50 % RH is supplied to an air - conditioned hall. The required conditions are 18°C DBT and 60 % RH. Determine : (i) Sensible heat and latent heat removed from the air per minute ; and (ii) Sensible heat factor for the system.

15. (a) Explain construction, working, advantages and disadvantages of Thermostatic Expansion valve with neat sketch.

Or

(b) State different types of compressors used in refrigerators. Write brief on Hermetically sealed compressor.

(4 × 10 = 40 marks)

D 94642 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Information Technology Engineering

IT 09 804 L24—MANAGEMENT INFORMATION SYSTEMS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What are the different levels of management ?
2. State the differences between RAM and ROM.
3. List the skills needed by information system professionals as a result of the distribution of computing activities.
4. List the common threats to information systems.
5. Write any *two* critical factors for an automobile dealership ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. What are the effects of system approach in information system design ?
7. Give examples for Office Automation system. And state the essential parts in office automation system.
8. List the alternative application development approaches.
9. What are the advantages of using in-house software development ?
10. What are the advantages of a decision support system ?
11. What does an end-of-file check attempt to prevent ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (A) Explain the role of top management in an organization with a simple structure.

Or

(B) Explain how systems approach is used in problem solving.

13. (A) Enumerate on the wireless technologies.

Or

(B) Describe two major classifications of printers. Provide one example of each type of the printer for each printer classification.

14. (A) Explain the financial accounting information systems that provide operational level input to marketing decision making ?

Or

(B) Discuss about the characteristics of the strategic planning system.

15. (A) Enumerate on Business system planning.

Or

(B) Describe the types of computer crime, fraud and abuse.

(4 × 10 = 40 marks)

D 94635 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE/PTEE 09 802—POWER SYSTEM PROTECTION AND UTILIZATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

I. 1 Name different types of protective relays.

2 Describe the function of lightning diverter ?

3 State the applications of static relay.

4 Mention the systems of traction.

5 What is meant by electric heating

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

II. 1 Summarize the importance of protective schemes employed in power system.

2 Discuss the causes of over voltages.

3 Differentiate static relay and magnetic relay.

4 Explain about the phase comparator.

5 Write short notes on attenuation.

6 Discuss the concept of dielectric heating.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

II. 1 Discuss the construction details and principle of operation of induction type directional over current relay.

Or

2 Describe the types of protective schemes employed for the protection of Busbar.

3 Compose and draw the schematic of a vacuum Circuit Breaker and explain its function.

Or

4 Discuss the following :

i) Insulation Protection ; and

ii) Protection against lightning.

5 What are the classifications of protective relays based on their function ? Explain any *one* in detail.

Or

6 With neat sketch describe the working of micro processor based impedance relay.

7 Explain the different types of braking with neat diagrams.

Or

8 Discuss construction and operation of induction furnace with the neat diagram.

(4 × 10 = 40 marks)

D 94637 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE/PTEE 09 804 L06—SPECIAL ELECTRICAL MACHINES

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is meant by full step operation ?
2. Give the structure of multi stack VR motor.
3. Give the Torque equation of SRM.
4. What are the materials used for making Hall IC pallet ?
5. Define load commutation.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. What is the function of drive circuit in stepping motor ? Explain with a diagram.
7. What are the main differences between the axial and radial airgap motors ?
8. What is meant by soft starters ? Classify and explain the operation in SRM.
9. Explain the working of Square wave permanent magnet brushless motor drives.
10. Explain how PMBLDC motors are controlled by a microprocessor.
11. What is meant by Vector control of PMSM ? Explain.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. State and explain the static and dynamic characteristics of a stepper motor.

Or

13. Explain the working of single and multi-stack configured stepping motors.

14. Derive the torque equation of a synchronous reluctance motor.

Or

15. Explain the following in switched reluctance motor :

    (i) Method of rotor position sensing.

    (ii) Sensor less operation.

16. Illustrate the working of different types of power controllers used for the control of permanent magnet brushless D.C. Motors.

Or

17. Discuss the magnetic circuit analysis relevant to permanent magnet brushless D.C. Motor. Also draw the characteristics.

18. Derive EMF and Torque equations of permanent magnet synchronous motor.

Or

19. Write short notes on :

    (i) Volt-ampere requirements in PMSM Motor.

    (ii) Torque /speed characteristics in PMSM Motor.

(4 × 10 = 40 marks)

D 94636 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE/PTEE 09 803 L09—ENERGY AUDITING, CONSERVATION AND MANAGEMENT

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

I. 1 Identify the potential of renewable energy in India.

2 What is Cogeneration ?

3 State the benefits of power factor improvement.

4 What is meant by depreciation ?

5 Tell the need of Energy management ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

II. 1 Describe the applications and advantages of renewable energy

2 What is the effect of low power factor on energy consumption ? Explain.

3 Explain the need of energy efficient system and give its merits.

4 Discuss in detail about different Luminaries used to increase energy efficiency.

5 A company invests Rs. 12 lakhs and completes an energy efficiency project at the beginning of year 1. The firm investing its own money and expects an Internal Rate of Return (IRR) of at least 24 % on constant positive annual net cash flow of Rs. 2.5 lakhs over a period of 5 years starting from year 1. What is the IRR of this measure ?

6 Discuss the various qualities and functions of Energy Manager.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

III. 1 Elaborate in detail about the various forms of renewable energy.

Or

2 Write short notes on Fuel cell energy and Biogas energy.

3 Explain in detail about electrical load management and maximum demand control.

Or

4 Explain the constructional details of energy efficient motors and also explain its characteristics.

5 Discuss in detail about the computation of economic aspects by Simple Payback Method and Net Present value method.

Or

6 Illustrate in detail the energy saving measures in DG set-fans and blowers ?

7 Explain the methodology for detailed Energy Audit Process.

Or

8 Explain in detail the various Energy conservation options.

(4 × 10 = 40 marks)

D 94634 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electrical and Electronics Engineering

EE/PTEE 09 801—ELECTRICAL SYSTEM DESIGN

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. What is meant by schematic diagram ?
2. Give the function of earth wire.
3. What is the need for DBs in electrical circuits ?
4. Give the name of the equipment used for measuring earth resistance.
5. What is the function of diffuser ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. With suitable example, differentiate between schematic and wiring diagram.
7. Write important safety aspects of electrical system design.
8. Explain the design of an electrical circuit which includes an air conditioner.
9. What is plate earthing ? Explain.
10. How Megger is used for testing of earthing. Explain.
11. What are the various types of lighting scheme ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

12. Explain Indian Electricity Rules and Energy Conservation Act.

Or

13. Explain the design of electrical wiring for 2BHK house. Prepare the estimate. Assume the essential load.

14. Explain the electrical installation of a high rise building with neat sketches.

Or

15. Design the electrical installation of an air-conditioned cinema theatre with 1000 seats capacity.

16. Design a 11KV/415V indoor substation up to 630KVA with a neat layout and schematic diagram.

Or

17. Explain various types of earthing schemes used in ESD. Explain.

18. Explain general rules for office building and flood lighting.

Or

19. Explain the design rules and procedure of airport lighting.

(4 × 10 = 40 marks)

D 94632 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 804 L11—CRYPTOGRAPHY AND NETWORK SECURITY

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is Steganography ?
2. What is a public key certificate ?
3. Differentiate Message Authentication Code and Hash function.
4. What are the services provided by PGP services ?
5. What are the protocols used to provide IP security ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain DES Algorithm in detail.
7. List the steps in RSA algorithm using an example and Explain how encryption and decryption are done using RSA cryptosystems.
8. What is a direct digital signature ? List the requirements of digital signature.
9. What is the role of compression function in hash function ? Explain.
10. Discuss the Handshake protocol in detail.
11. Explain about S/MIME in detail.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carry 10 *marks.*

12. (A) Discuss various block cipher modes of operation in detail.

Or

(B) Explain the OSI security architecture along with the services available.

Turn over

13. (A) Explain about Diffie Hellman Key exchange algorithm with one suitable example.

Or

(B) Perform encryption and decryption using RSA algorithm for the following. P = 7 ; q = 11 ; e = 17 ; M = 8.

14. (A) Explain security hash functions in detail and MAC's.

Or

(B) What types of attacks are addressed by message authentication ? Explain.

15. (A) Explain Pretty Good Privacy in detail.

Or

(B) Explain different types of firewall and its configuration in detail.

(4 × 10 = 40 marks)

D 94630 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 803 L20—MOBILE COMPUTING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What are the two basic groups of logical channels in GSM ?
2. Mention the disadvantages of WLAN.
3. What is mobility anchor point ?
4. What is WSP ?
5. What is meant by roaming ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Give short note on mobility management.
7. Explain the configuration of satellite networks.
8. Discuss how optimization is achieved in mobile IP.
9. Elucidate DSDV.
10. Describe DHCP.
11. Explain WAP gateway and protocols.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 10 *marks.*

12. Explain satellite networks in detail.

Or

13. Explain GSM architecture.

14. Detail the time - bounded service on top of the standard DCF mechanism where ad hoc networks cannot use the function.

Or

15. The channel access control sublayer of HIPERLAN offers a connectionless data transfer service to the higher MAC layer. Justify the above statement with related references.

16. Name the inefficiencies of mobile IP regarding data forwarding from a correspondent node to a mobile node. What are optimizations and what additional problems do they cause ?

Or

17. Discuss how optimization in achieved in mobile IP.

18. Explain wireless application protocols with the it's version WAP 2.0 in detail.

Or

19. Explain the concept of wireless markup language.

(4 × 10 = 40 marks)

D 94629 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 803 L17—PHOTONIC SWITCHING AND NETWORK

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Define SONET.
2. What is meant by wavelength conversion ?
3. What is the need for power budget analysis in OC networks ?
4. What is meant by wavelength routing ?
5. Give an example for fiber nonlinearity.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. What is meant by an optical coupler ? Explain with an example.
7. Explain the principle of operation of an optical isolator.
8. Draw the gain characteristics of SOA and explain.
9. Explain how the performance of an optical system is evaluated.
10. Discuss the effect of nonlinearities in the performance of optical systems.
11. Explain the simplest PON architecture.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. A) Discuss the components of optical networks.

Or

B) With neat sketches explain the operation of SONET.

13. A) Explain in detail the characteristics of amplifier cascades.

Or

B) Explain the principle of operation of semiconductor optical amplifier, with a block diagram.

14. A) Discuss the power budget analysis for BER of 109 of optical amplified links.

Or

B) Analyze the performance of optically amplified links.

15. A) Describe in detail the node design for wavelength routing networks.

Or

B) With neat sketches explain the architecture of BPON system.

(4 × 10 = 40 marks)

D 94628 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 803 L13—MICROWAVE ACTIVE DEVICE AND CIRCUITS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is a mixer ? Give examples.
2. Define gain and stability.
3. What is coupled line filters ?
4. What is meant by impedance scaling ?
5. What is a dielectric material ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Draw the circuit-of a diode rectifier and explain its working.
7. Write short note on broad band amplifier.
8. What is an oscillator ? What are its applications ?
9. Explain any 2 properties of S matrix.
10. Explain microwave filters.
11. What is substrate ? What are the various materials used ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer any **one** *question from a module.*
Each question carries 10 *marks.*

12. (a) Describe the sources of noise and noise power.

Or

(b) Write short notes on :

(1) Single ended mixer. (5 marks)

(2) Balanced mixer. (5 marks)

13. (a) Compare the characteristics of both MESFET and bipolar transistors. Use necessary diagrams.

Or

(b) Discuss in detail about the various losses in micro strip lines.

14. (a) Derive expressions for S parameters in terms of Z parameters and Y parameters for a 2-port network.

Or

(b) Explain the steps in designing a composite filter. Also write down the equations and draw the circuit for designing a composite low pass filter.

15. (a) Differentiate monolithic MIC and hybrid MIC.

Or

(b) Explain in detail the types of MICs.

(4 × 10 = 40 marks)

D 94627 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 803 L08—INTRODUCTION TO MEMS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Mention any *four* applications of Microsystems.
2. Write the working principles of MEMS accelerometers.
3. Given the expression for Kundsen number and Mach number
4. Write the advantages of epitaxy method of thin film deposition.
5. How wire bonding methods used to connect the core element during packaging of devices ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

1. Explain the scaling in electrostatic forces.
2. Describe the mechanical properties of silicon dioxide, silicon carbide and silicon nitride in MEMS device fabrication process.
3. Explain the working principles of chemical vapor deposition and mention its classification.
4. Explain the Fourier law of heat conduction with an example.
5. Describe the dry etching process.
6. Describe wet etching process.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

1. (a) Compare Micro systems and microelectronics.

Or

(b) Explain the working principles of microactuators and microaccelerometers.

2. (a) Elaborate the role of polymers in MEMS device.

Or

(b) Explain the design theory of accelerometers.

3. (a) Describe the steps involved in photolithography process.

Or

(b) Explain the vapor phase epitaxy method with an example.

4. (a) Describe the mechanical problems associated with surface micromachining.

Or

(b) In details explain the various surface bonding techniques available for packaging the MEMS devices.

(4 × 10 = 40 marks)

D 94626 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 802—WIRELESS MOBILE COMMUNICATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Define cell splitting.
2. List the different techniques of diversity.
3. What is power efficiency ?
4. Define Jamming Margin.
5. What is the cut off frequency of the baseband, Gaussian, pulse shaping filter used in the GSM system ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. State the operating principle of adhoc networks.
7. Derive the expression for the blocking probability (Erlang B formula) of a trunked system which provides no queuing for blocked calls.
8. Briefly discuss the concepts of multiuser detection.
9. Explain the principle of RAKE receiver.
10. Explain WCDMA.
11. State the properties needed for a signal to be spread-spectrum modulated.

(4 × 5 = 20 marks)

Turn over

Part C

Answer any **one** *question from a module.*
Each question carries 10 *marks.*

12. (a) Explain how do the co channel and adjacent channel interference occur and how are they minimized.

Or

(b) With timing diagram illustration explain how a call is initiated by a mobile is established.

13. (a) Draw a block diagram of binary spread spectrum sliding correlator multipath measurement system. Explain how it is used to measure power delay profiles.

Or

(b) Explain the narrow band modelling methods of short scale and long scale fading.

14. (a) Describe the Time Division Multiple access (TDMA) in detail. Write the equation of efficiency of TDMA and the number of channels in TDMA system.

Or

(b) Discuss in detail about the multiuser detection in CDMA.

15. (a) With neat sketches explain the GSM architecture and the various interfaces used in GSM.

Or

(b) Explain the serving frequency bands and objectives of GSM.

(4 × 10 = 40 marks)

D 94625 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Electronics and Communication Engineering

EC/PTEC 09 801—DATA AND COMMUNICATION NETWORK

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is poisson distribution ?
2. Name the various layers in TCP/IP protocol suite.
3. What is meant by flow congestion control ?
4. What is the need for routing algorithms ?
5. State any 2 features of DMS-100 switches.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain any *five* characteristics of a queueing process.
7. Differentiate character and bit-oriented protocols.
8. Explain ARQ retransmission strategies.
9. Write short note on CSMA/CD algorithm.
10. Explain about pure ALOHA.
11. What are delay models ? Explain their significance.

(4 × 5 = 20 marks)

Turn over

Part C

Answer any **one** *question from a module.*
Each question carries 10 *marks.*

12. (a) Explain in detail about any one queueing process.

Or

(b) Explain with a neat architecture about infinite server-case State dependent Queues death.

13. (a) With a neat diagram, explain OSI reference model.

Or

(b) Give an account on XMODEM and YMODEM protocols.

14. (a) Explain in detail switched multi mega bit data service.

Or

(b) Write short notes on :

(i) Distributed queue dual bus. (5 marks)

(ii) X.25 protocol. (5 marks)

15. (a) Discuss in detail about GoS and Erlang formula.

Or

(b) With suitable example, explain Digital Switching Network.

[4 × 10 = 40 marks)

D 94624 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Computer Science and Engineering

CS/PTCS 09 804 L20—INFORMATION RETRIEVAL

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *the questions.*

1. Why is Information Retrieval and its techniques being important in web search ?
2. Draw the Taxonomy of Information Retrieval Models.
3. How is Harmonic Mean Calculated ?
4. Define coverage and Novelty.
5. What are authorities and Hubs in HITS ranking algorithm ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Explain the Latent Semantic Indexing Model of information Retrieval.
7. Discuss about the different models for browsing.
8. Write the secondary tasks in TREC -6 and evaluation Measures Specified in TREC Conferences.
9. Explain various common query protocols.
10. What are Markup languages ? Discuss the features of different markup languages.
11. Explain the problems posed by web.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *the questions.*

12. Explain how documents are represented and retrieved using Belief Network model in probabilistic space and vector space.

Or

13. Explain the steps in the information retrieval with a neat diagram.

14. Discuss about the Query Expansion based on a Similarity Thesaurus.

Or

15. What is clustering ? Explain different local clustering used in query expansion.

16. Explain how inverted files helps in information Retrieval.

Or

17. Discuss in detail about the information retrieval in multimedia data.

18. Explain the centralized and distributed architecture of search engine.

Or

19. Write a note on :

    i) Crawling the web. (5 marks)

    ii) Web Directories. (5 marks)

(4 × 10 = 40 marks)

D 94623 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Computer Science and Engineering

CS/PTCS 09 804 L16—WEB PROGRAMMING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *the questions.*

Each question carries 2 *marks.*

Short answer questions (one/two sentences) :

1. How lists are handled in XHTML ?
2. What are the different levels of style sheets ?
3. What are the different selector forms provided in CSS ?
4. What are the uses of Java script ?
5. What is a namespace ? What is its use in XML ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

Each question carries 5 *marks.*

Analytical/Problem solving questions :

6. How positioning and moving of elements are done in dynamic XHTML ?
7. How stacking of elements done in java script/XHTML ? Write a program to illustrate dynamic stacking of images.
8. How elements and attributes are declared in a DTD ? Give a sample DTD for defining on airplane.
9. What are the three categories of Perl variables? How are they handled ? Give examples.

Turn over

10. What is a query string ? How is it transmitted to the server with the GET and POST methods ?

11. How files are handled in Perl ? Lists file use specifications and their meaning.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

Descriptive/Analytical/Problem solving questions :

12. (A) What is hyper text ? Explain HTTP phases. Mention various methods and status codes of HTTP.

Or

(B) Give the standard structure of XHTML document. How line breaks, headings and fonts are handled in XHTML ?

13. (A) Which are the methods used for accepting inputs from the keyboard and for displaying results on the screen ? Write a java script for accepting the user name and display it on the browser window.

Or

(B) Write an XHTML document that contains three short paragraphs of text, stacked on top of each other, with only enough of each showing, so that mouse cursor can always be placed over some part of them. Write java script code so that when cursor is placed over the exposed part of any paragraph, it should rise to the top to become completely visible.

14. (A) Explain in detail about the development of session beans and elaborate about the steps in creation and implementing interfaces.

Or

(B) Explain in detail about the absolute and relative positioning of elements in java script.

15. (A) Discuss about the steps involved in establishing connection from PHP to MYSQL database.

Or

(B) Explain in detail about AJAX Programming.

(4 × 10 = 40 marks)

D 94622 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Computer Science and Engineering

CS/PTCS 09 803 L11—ADVANCED DATABASE DESIGN

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

All questions *are* **compulsory.**
Each question carries 2 *marks.*

I. (a) List any *two* real time examples for Object oriented database.

(b) How to alter and delete commands from a table ?

(c) State the advantages and disadvantages of Object Oriented Databases.

(d) Define Transaction Commit.

(e) Name any *two* popular Oracle Tools.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

II. (a) Describe the Client - Server Architecture for Distributed DBMS.

(b) Assume a relation MARKS (ID, score). You are supposed to assign grades to students based on the score as follows : grade F if score < 40, grade C if 40 ≤ score < 60, grade B if 60 ≤ score < 80, and grade A if 80 ≤ score. Write SQL queries to do the following :

(i) Display the grade for each student, based on the relation.

(ii) Find the number of students with each grade.

(c) Exploit Data Log and Prolog with an example.

(d) Discuss the challenges and characteristics of Multimedia Database.

(e) Enumerate the oracle Database background process flow.

(f) Elaborate the significance of Geographic Information System (GIS).

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *the questions.*
Each question carries 10 *marks.*

III. (a) Suppose you are given a relation grade points (grade, points), which provides a conversion from letter grades in the *takes* relation to numeric scores; for example an "A" grade could be specified to correspond to 4 points, an "A–" to 3.7 points, a "B+" to 3.3 points, a "B" to 3 points, and so on. The grade points earned by a student for a course offering (section) is defined as the number of credits for the course multiplied by the numeric points for the grade that the student received. Given the above relation, and the university schema, write each of the following queries in SQL. You can assume for simplicity that no *takes* tuple has null value for grade.

(i) Find the total grade-points earned by the student with ID 12345, across all courses taken by the student.

(ii) Find the grade-point average (GPA) for the above student, that is, the total grade-points divided by the total credits for the associated courses.

(iii) Find the ID and the grade-point average of every student.

Or

(b) Compare and contrast relational database and object oriented database systems.

IV. (a) How is data distribution handled in Distributive Database Management Systems ? Explain.

Or

(b) What is the purpose of Conceptual design in building a Model ? Discuss the entities and attributes in E-R Model.

V. (a) Discuss the methodologies and architecture of an Object Oriented Database.

Or

(b) How will you interpret theoretical meaning of the rules ? Discuss with an example.

VI. (a) Elaborate about the Oracle Database Architecture.

Or

(b) Discuss the ten powerful features of Microsoft Access and mention the difference between Microsoft Access and Oracle.

(4 × 10 = 40 marks)

D 94621 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Computer Science and Engineering

CS/PTCS 09 803 L10—ADVANCED TOPICS IN OPERATING SYSTEMS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

I. (a) Differentiate a process and a thread.

(b) Mention the functions of an operating system.

(c) Define mutual exclusion.

(d) Define Reliability.

(e) Mention the advantages of using a database operating system.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

II. (a) Explain the different states of a process.

(b) Write a note on failure recovery.

(c) Explain about the multiprocessor system architecture.

(d) Explain about the caching mechanism.

(e) Explain the need for real time operating system.

(f) Write about the working of the distributed database systems.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

III. (a) Write a solution for the dining philosopher's problem using semaphores.

Or

(b) Explain the various design approaches for an operating system.

Turn over

IV. (a) Explain about the deadlock handling strategies in distributed systems.

Or

(b) Discuss in detail about the Read-Replication and the Full-Replication algorithms in a distributed shared memory.

V. (a) Explain about the hypercube architecture in detail.

Or

(b) Explain about the interconnection networks for a multiprocessor system.

VI. (a) Describe in detail about the serializability theory in concurrency control.

Or

(b) Write in detail about the working of the Timestamp based algorithms.

(4 × 10 = 40 marks)

D 94620 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Computer Science and Engineering

CS 09 802—DATA MINING AND WAREHOUSING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 marks.

1. State the Significance of data mining.
2. Bring out the importance of data integration.
3. What do you mean by characteristic rule in data mining ?
4. What is the importance of cluster analysis ?
5. Enumerate the need for data warehouse.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Write short notes on kinds of patterns that can be mined in data mining.
7. Describe in detail about data reduction phase in data preprocessing.
8. Write short notes on mining association rules in large databases.
9. Explain in brief about transactional databases.
10. Explain in detail about Bayesian classification.
11. Discuss about the hardware and operational design of warehouse.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) With a neat sketch, explain in detail about data warehouse architecture.

Or

(b) Discuss about the data transformation and reduction steps in data preprocessing.

13. (a) Explain the data mining primitives and languages in detail.

Or

(b) Explain in detail about data generalization and discriminant rules in data mining.

14 (a) Explain in detail about decision tables and rough sets with an example.

Or

(b) Enumerate and explain the steps involved in :

(i) Classification and Prediction ; and

(ii) Decision Tree Induction (C4.5)

15. (a) Discuss in detail about recent trends and developments in data warehouse.

Or

(b) Write short notes on :

(i) Data warehouse tuning ; and

(ii) Data warehouse testing

(4 × 10 = 40 marks)

D 94619 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2020

Computer Science and Engineering

CS 09 801—COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1 Define Cycle Time.

2 Discuss about techniques that enhance vector performance.

3 Define Reliability and Availability.

4 What do you mean by interconnection network ?

5 Define Virtual Memory.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. How is an instruction set encoded ?

7. Brief about DLX architecture.

8. Write short notes on compiler vectorization.

9. Discuss about cross cutting issues.

10. Define Synchronization and its consistency models.

11. Explain about vector architecture.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

12 a) Explain in detail about role of compilers.

Or

b) Discuss in detail about pipelining with multicycle operations.

13. a) Write brief notes on dynamic hardware prediction

Or

b) Discuss the challenges faced in implementation of Instruction Level Parallelism.

14 a) Explain in detail about virtual memory and its protection mechanism.

Or

b) Discuss about I/O systems and its performance measures.

15. a) Discuss in detail about various models of memory consistency.

Or

b) Explain about detailed shared memory architecture.

(4 × 10 = 40 marks)

D 94616 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE/PTCE 09 804 L22—ENVIRONMENTAL POLLUTION CONTROL ENGINEERING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

Each question carries 2 *marks.*

1. List the different types of pollutants ?
2. What are the air pollution control equipment ?
3. What is an electrostatic precipitator and how does it work ?
4. Enlist the negative effects of light pollution.
5. List any *four* major laws that attempt to control air pollution ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

Each question carries 5 *marks.*

6. Explain the processes used for the restoration of water bodies.
7. Illustrate the Steps in Developing a Control Strategy.
8. Explain the functioning of a Gravitational Settling Chamber with the help of a diagram.
9. What are the effects of excessive noise and how your body reacts to it ?
10. List the reducing factors of light glare. How the glare can be reduced ?
11. How to Carry Out an Environmental Impact Assessment ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Explain in detail on the most common types of water contamination.

Or

(b) Explain in detail on the effects of thermal pollution.

13. (a) What are electrostatic precipitators ? Explain with diagram.

Or

(b) Explain in detail on wet scrubbers with diagram. Mention its advantages and disadvantages.

14. (a) (i) What things do you consider when planning noise measurement ? (4 marks)

(ii) What types of instruments are used for measuring noise? (6 marks)

Or

(b) What are the main types of light pollution? Also state the government act to reduce light pollution.

15. (a) Explain the chimney height in its construction to prevent pollution.

Or

(b) Explain the rules and regulations for land pollution in India.

[4 × 10 = 40 marks]

D 94615 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE/PTCE 09 804 L21—GROUND IMPROVEMENT TECHNIQUES

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Name any three methods for in situ densification of granular soil.
2. What do you understand by preloading ?
3. Define lime stabilization.
4. List the components of reinforced earth.
5. What is the purpose of geogrid ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain in brief on Vibro-Replacement Stone Columns for Ground Improvement.
7. What are the effects of soil stabilization by heating ? Also draw graphically the relationship between ultimate stress and temperature for various soils.
8. Explain in brief on lime columns method in soil mixing.
9. Discuss the process involved in permeation grouting.
10. Write notes on soil nailing.
11. Give the applications and functions of geotextiles.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) What are the Ground Improvement Techniques for Stabilization of Soil for Various purposes ? Explain in detail.

Or

(b) What is compaction ? Explain the effects of compaction on soil properties.

Turn over

13. (a) Explain lime soil stabilization with its principle. Also explain the factors affecting lime soil stabilization.

Or

(b) Explain in detail on grouting and the types of material used for it.

14. (a) Explain in detail on the components of reinforced earth.

Or

(b) Explain the soil nailing techniques with its types. List its installation considerations and applications.

15. (a) Explain the various properties, functions and classifications of Geotextiles.

Or

(b) A 4 m high and 10m wide embankment is to be built on soft ground with a basal geotextile layer. Calculate the geotextile strength and modulus required in order to prevent block sliding on the geotextile. Assume that the embankment material has a unit weight of 18 KN/m^3. The angle of shearing resistance is 35° and the geotextile -soil interface angle of shearing resistance is two-third of that value.

(4 × 10 = 40 marks)

D 94614 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE/PTCE 09 804 L24—REMOTE SENSING AND GIS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. State Planck's law.
2. Define passive remote sensing.
3. What is spatial resolution ?
4. Specify the use of resources information system.
5. What is the role of data digitizer ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Give short note on synoptivity.
7. Explain EMR interaction with water vapour and ozone.
8. Specify the characteristics of land satellite and the sensors.
9. Write short notes on image filtration.
10. Describe the role of GIS in urban planning.
11. Write short notes on FCC composites.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Explain in detail about the spectral signature components.

Or

(b) Explain the scattering of EMR.

13. (a) Describe sensors in IRS series.

Or

(b) Describe multi-spectral scanning.

14. (a) Elucidate different types of projections.

Or

(b) Enunciate reclassification and buffering.

15. (a) Describe image processing techniques.

Or

(b) Model highway alignment studies using GIS.

(4 × 10 = 40 marks)

D 94613 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE/PTCE 09 803 L16—URBAN TRANSPORTATION PLANNING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *the questions.*
Each question carries 2 *marks.*

1. State the concept of travel demand.
2. What are called travel attributes ?
3. Distinguish between generations and attractions.
4. List the important growth factor methods of trip distribution.
5. Define 'modal split'.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Briefly describe the urban travel characteristics.
7. Distinguish between sequential and recursive process.
8. Discuss the standards for sampling size for home interview survey.
9. Write short note on 'external cordon'.
10. List the disadvantages of average factor method.
11. Stat the application of traffic assignment.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *the questions.*
Each question carries 10 *marks.*
Draw sketches wherever necessary.

12. Explain in detail about the various stages in transport planning.

Or

13. Discuss the difficulties in transport planning for small and medium cities.

14. What is a Trip ? Explain the important classes of trip purpose.

Or

15. Differentiate between home interview surveys and road side interview surveys.

16. Describe the synthetic methods of trip distribution.

Or

17. The number of trips produced in and attracted to the three zones 1, 2 and 3 are tabulated below :

Zone	:	1	2	3	Total
Trips Produced		14	3	28	75
Trips attracted	:	33	28	14	75

The order of closeness of the zones is including by the following matrix :

C	D	1	2	3
1		1	2	3
2		2	1	3
3		2	3	1

The zonal L factors are given below :

Zone	L Factors
1	0.04
2	0.02
3	0.04

Distribute the trips between the zones.

18. Describe the recent developments in modal split analysis.

Or

19. Explain in detail about the minimum path trees with suitable example.

(4 × 10 = 40 marks)

D 94612 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE/PTCE 09 803 L15—SURFACE HYDROLOGY AND WATER POWER

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is water balance equation ?
2. Mention the uses of unit hydrograph.
3. Define unit hydrograph.
4. Discuss about the term prism storage.
5. What do you mean by spillway ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Define Φ index and W index.
7. What is meant by infiltration capacity ?
8. Mention the limitations of unit hydrograph.
9. Give the short notes on reservoir routing.
10. Write a note on water hammer effect.
11. Enlist the advantages of a hydroelectric power plant.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 10 *marks.*

12. a) Explain about the direct method of measuring evapotranspiration.

Or

b) i) A seven hour storm over a basin of 1830 km^2 produced the rainfall intensities at half an hour interval are 4, 9, 20, 18, 13, 11, 12, 2, 8, 16, 17, 13, 6 and 1 mm/hour. If the corresponding observation runoff is 73.2×10^6 m^3. Estimate the Φ index of the storm. (5 marks)

ii) What are the methods of water conservation techniques ? (5 marks)

13. a) i) Write a note on base flow separation. (5 marks)

ii) List out the characteristics of run off. (5 marks)

Or

b) Given the ordinates of a 4-hr unit hydrograph as in Table 1. Derive the ordinates of a 12-hr unit hydrograph for the same catchment :

Table 1

Time (hr)	0	4	8	12	16	20	24	28	32	36	40	44
Ordinates of 4-hr UH	0	20	80	130	150	130	90	52	27	15	5	0

14. a) i) Enlist few points about flood frequency analysis. (5 marks)

ii) Give a note on flood routing. (5 marks)

Or

b) Flood frequency computations for the river Chambel at Gandhisagar dam, by using Gumbel's method, yielded the following results as shown in Table 2 :

Table 2

Return period T (Years)	Peak Flood (m^3/s)
50	40,809
100	46,300

Estimate the flood magnitude in this river with a return period of 500 years.

15. a) i) Write a note on surge tank. (5 marks)

ii) Discuss about canal intake. (5 marks)

Or

b) i) Write a short note on draft tubes. (5 marks)

ii) Write down the elements of hydro power scheme. (5 marks)

[4 × 10 = 40 marks]

D 94610 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 09 802—QUANTITY SURVEY AND VALUATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *the questions.*

Each question carries 2 *marks.*

1. What are the different types of estimate ?
2. What is meant by Bar Bending Schedule ?
3. What are the factors control the particular item of work ?
4. Define year's purchase.
5. What is depreciation ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

Each question carries 5 *marks.*

6. Explain approximate estimate.
7. Explain the steps involved in preparation of detailed estimate for road works.
8. Prepare a bar bending schedule for continuous two way slab.
9. Explain about profit based method.
10. How you will estimate earth work for irrigation canal ?
11. What is the purpose of conveyance statement, and mention the preparation of the same.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. Explain in detail about plinth area method, cubic rate method and unit rate method.

Or

13. What is the difference between individual wall method and centre line method ? Explain in detail with the example.

14. Prepare a detailed estimate for supplying and laying 200 mm. diameter, glazed stoneware pipe for 250 m length joining with 1 : 2 cement mortar including trenching upto a depth of 150 cm.

Or

15. Prepare a bar bending schedule for a slab of clear room size 3 m. × 6 m. Thickness of wall is 200 mm. and thickness of slab is 100 mm. Reinforcement consist of HYSD bars 12 mm. @ 150 mm. c/c and bent up alternate bar at 1/5 span as main reinforcement and 8 mm. @ 200 mm. as distribution reinforcement.

16. Calculate the quantity of materials required for the construction of 10 m^3 masonry wall (mix ratio of cement mortar is 1 : 5) and also calculate the quantity of materials required for plastering a wall of length 10 m. and height 7 m. (Mix ratio of cement mortar is 1 : 3).

Or

17. Write a detailed specification for the following items of work :

    (i) Brickwork for I class brick.

    (ii) Colour washing.

18. Explain different methods to estimate depreciation.

Or

19. Compare various methods of determining value of property.

(4 × 10 = 40 marks)

D 94609 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Civil Engineering

CE 09 801—ENVIRONMENTAL ENGINEERING-II

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. a) Define Self Cleansing Velocity.
   b) What are sewer appurtenances ?
   c) Define BOD.
   d) What is mean by oxygen sag curve.
   e) Differentiate biodegradable and-non biodegradable waste and give example.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

2. a) Explain about the different types of traps with neat diagram .
   b) Explain about Inverted Siphon used in sewerage systems with neat diagram.
   c) Explain about skimming tanks.
   d) Describe the factors affecting self purification of Streams.
   e) What are the effects of underground disposal.
   f) Describe about Incineration.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

3. a) Explain about the systems of sewerage.

Or

   b) A sewer line drains a single family residential area with I = 0.35 (Coefficient of Impermeability). The area drained is 10,00,000 m^2 and the intensity duration formula is R = 5230/(t + 30). Assuming time of conc. as 15 minutes, determine the total quantity of sewage (storm water and Domestic sewage) in cumecs by taking the population as 1,00,000.

Turn over

4. a) Explain the Design, construction and operation aspects of principle of Trickling Filter.

Or

b) A BOD test was conducted at the temperature of 30° C for a sewage. 0.5 ml sewage sample was added to 300 ml BOD bottle. Initial Dissolved Oxygen Concentration was found to be 8.5 mg/L and Final DO Cone was found to be 2 mg /L. Find the 5 day BOD at 20° C. Take K_d as 0.23 at 20° C.

5. a) Explain about the Self purification of streams .

Or

b) Design a Septic tank for a community of population 500.

6. a) Explain the sources and types of solid waste.

Or

b) Explain any one of the particulate control method with neat diagram.

(4 × 10 = 40 marks)

D 94604 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Automobile Engineering

AM 09 801—TRANSPORT REFRIGERATION AND AIR CONDITIONING

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Calculate the mass of the air contained in a room of dimension 4 by 6 by 3 m if the specific volume of the air is 0.83 m^3/kg ?
2. Enumerate are the advantage of vapour compression refrigeration system over air refrigeration system ?
3. Define Dalton's law of partial pressures.
4. Define sensible heat factor.
5. List the advantage and disadvantages of freezing in food preservation.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Draw neatly p-h chart and explain the same.
7. Explain the effect of suction pressure and compression pressure.
8. Derive an expression for the enthalpy of moist air.
9. On a particular day, the atmospheric air was found to have a dry bulb temperature of 30°C and a wet bulb temperature of 18°C. The barometric pressure was observed to be 756 mm of Hg. Using the tables of psychrornetric properties of air, determine the relative humidity.

Turn over

10. Derive an expression for the enthalpy of air leaving from the cooling and humidifieation by water injection system.

11. Describe the food processing techniques used for storing dairy products.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Describe in brief about the simple vapour absorption system with neat sketch and explain the various subsystems involved in it.

Or

(b) A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is just dry at the end of compression and there is no undercooling of the liquid before the expansion valve. Determine : 1. C.O.P of the cycle ; and 2. Capacity of the refrigerator if the fluid flow is at the rate of 5 kg/min.

Table 1 :

Pressure (bar)	Saturation temperature (K)	Enthalpy (kJ/kg)		Entropy (kJ/kg K)	
		Liquid	Vapour	Liquid	Vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

13. (a) The humidity ratio of atmospheric air at 28°C dry bulb temperature and 760 mm of mercury is 0.016 kg/kg of dry air. Determine : 1. Partial pressure of water vapour ; 2. Relative humidity ; 3. Dew point temperature ; 4. Specific enthalpy ; and 5. Vapour density.

Or

(b) Derive the expression for the specific humidity of air for adiabatic saturation temperature and explain the same with suitable diagram.

14. (a) Explain heating and humidification reaction with the help of suitable diagram and derive sensible heat factor for the same.

Or

(b) The atmospheric air at 25° C dry bulb temperature and 12°C wet bulb temperature is flowing at the rate of 1 00 m^3/min through duct. The dry saturated steam at 100° C is injected into the air steam at the rate of 72 kg per hour. Calculate the specific humidity and enthalpy of the leaving air. Also determine the dry bulb temperature, wet bulb temperature and relative humidity of the leaving air.

15. (a) Write a short notes on the following food processing methods :

1 Heat Processing (2.5M) 2 Dehydration (2.5M)

3 Chemical preservation (2.5M) 4 Oils and spices (2.5M)

Or

(b) What are the two main causes of food spoilage ? Discuss in detail.

(4 × 10 = 40 marks)

D 94603 (Pages : 3) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE SUPPLEMENTARY EXAMINATION, NOVEMBER 2020

Applied Electronics and Instrumentation Engineering

AI 09 804 L25—PROBABILITY AND RANDOM PROCESSES

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. If $A \subset B$, then $P_r(A) \leq P_r(B)$.
2. What is the probability of drawing either a king or a queen in a single draw from a well shuffled pack of 52 cards ?
3. A random variable has the pdf given by $f_x(x) = \frac{1}{\sqrt{8\pi}} \exp\left(\frac{-(x+3)^2}{8}\right)$. Find the probability of $P_r(X \leq 0)$ and express the answers in terms of Q-functions.
4. An exponential random variable has a pdf given by $f_x(x) = b\exp(-bx)u(x)$,[$u(x)$ is the unit step function], find the nth central moment.
5. Define the wide sense stationary.

(5 × 2 = 10 marks)

Part B

Answer any **four** *question.*
Each question carries 5 *marks.*

6. Prove that $P_r(B/A) = P_r(B)$, then it follows that

   (a) $P_r(A,B) = P_r(A)P_r(B)$; (b) $P_r(A/B) = P_r(A)$. Furthermore show that if $P_r(B/A) \neq P_r(B)$ then the two conditions (a) and (b) do not hold holds.
7. Prove the following properties of the Gamma function :
   (a) $\Gamma(n) = (n-1)!$ for $n = 1, 2, 3, \ldots$ (b) $\Gamma(x+1) = x\Gamma x$ (c) $\Gamma\frac{1}{2} = \sqrt{\pi}$.
8. A random variable has a probability density function of the form $f_x(x) = \frac{c}{x^2+4}$. Find

   (a) the constant value C ; (b) $P_r(X > 2)$; (c) $P_r(X < 3)$.

Turn over

9. Suppose X is a random variable with an exponential pdf of the form $f_x(x) = 2e^{-2x}u(x)$ [$u(x)$ is the unit step function]. A new random variable is created according to the transformation Y = 1 – X. Find (a) Range for X and Y ; (b) $f_Y(y)$.

10. The three letters C, A and T represent the states of a word generation system. Let the initial state probability vector be $\left(\frac{1}{3}\right), \left(\frac{1}{3}\right), \left(\frac{1}{3}\right)$ for the three letters respectively. The transition matrix is given as $P = \begin{pmatrix} 0.1 & 0.7 & 0.2 \\ 0.6 & 0.1 & 0.3 \\ 0.1 & 0.8 & 0.1 \end{pmatrix}$. What is the probability of generating a proper three letter English word after two transitions from the initial state.

11. A random process X(t) consists of three member functions $x_1(t) = 1, x_2(t) = 3, x_3(t) = \sin(2\pi t)$. Each member functions occurs with equal probability. Find the mean and autocorrelation.

(4 × 5 = 20 marks)

Part C

Answer **all** *question.*
Each question carries 10 *marks.*

12. (a) Two six sided dice are thrown. Find the probabilities of each of the following events (i) 5 does not occur on either throw ; (ii) the sum is 7 ; (iii) 5 and 3 occur in any order ; (iv) both throws are 5 ; (v) either throw is a 6.

Or

(b) Cards are drawn from a 52 card deck until the third club is drawn. After each card is drawn, it is put back in the deck and the cards are reshuffled so that each card drawn is independent of all others :

(i) Find the probability that the 3rd club is drawn on the 8th selection.

(ii) Find the probability that at least 8 cards are drawn before the 3rd club appears.

(iii) Repeat parts (a) and (b) if the cards are drawn without replacement. That is, after each card is drawn, the card is set aside and not replaced in the deck.

13. (a) Prove the integral identity, $I = \int_{-\infty}^{\infty} \exp\left(\frac{-x^2}{2}\right) dx = \sqrt{2\pi}$.

Or

(b) Mr. Hood is a good archer. He can regularly hit a target having a 3 ft. diameter and often hits the bull's eye, which is 0.5 ft. in diameter, from 50 ft. away. Suppose the miss is measured as the radial distance from the center of the target and, further, that the radial miss distance is a Rayleigh random variable with the constant in the Rayleigh PDF being $\sigma^2 = 4$ (sq.ft.)

(i) Determine the probability of Mr. Hood's hitting the target.

(ii) Determine the probability of Mr. Hood's hitting the bull's-eye.

(iii) Determine the probability of Mr. Hood's hitting the bull's-eye given that he hits the target.

14. (a) Prove that all odd central moments of a Gaussian random variables are equal to zero. Furthermore, develop an expression for all even central moments of a Gaussian random variable.

Or

(b) A random variable X has a uniform distribution over the interval $\left(\frac{-a}{2}, \frac{a}{2}\right)$ for some positive constant α.

(i) Find the coefficient of skewness for X.

(ii) Find the coefficient of kurtosis for X.

(iii) Compare the results of (i) and (ii) with the same quantities for a standard normal random variable.

15. (a) A student takes this course at period 1 on Monday, Wednesday and Friday. Period 1 starts at 7.25 A.M. Consequently, the student sometimes misses class. The student's attendance behaviour is such that she attends class depending only on whether or not she went to the last class. If she attended class on one day, then she will go to class the next time it meets with probability 1/2. If she did not go to one class, then she will go the next class with probability 3/4.

(i) Find the transition matrix P.

(ii) Find the probability that if she went to class on Wednesday, she will attend class on Friday.

(iii) Find the probability that if she went to class on Monday, she will attend class on Friday.

(iv) Does the Markov chain described by this transition matrix have a steady-state distribution ? If so, find that distribution.

Or

(b) State and prove Chapman-Kolmogorov equation.

(4 × 10 = 40 marks)

D 94602 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2020

Applied Electronics and Instrumentation Engineering

AI 09 802—DATA AND COMPUTER COMMUNICATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is data communication ?
2. Define PSDN.
3. State the significance of parity bit.
4. Define congestion in networks.
5. Differentiate local area and wide area network.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Write short notes on channel capacity in network transmission.
7. Which type of transmission is used in Email and chat room ? Differentiate between both types of transmission.
8. What are the limitations of leaky bucket algorithm ?
9. Write short notes on FDDI.
10. Discuss on flow control mechanisms.
11. Discuss transport protocols.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. A) Discuss in detail about wireless and guided transmission.

Or

B) Explain various signal encoding schemes.

Turn over

13. A) Explain distance vector routing algorithm.

Or

B) Explain in detail the error control mechanisms.

14. A) Elucidate congestion control in switched networks.

Or

B) With a neat sketch explain various network topologies.

15. A) Explain IPV4 datagram format.

Or

B) Describe in detail about the security measures in network.

(4 × 10 = 40 marks)

C 81429 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, APRIL 2020

Information Technology Engineering

IT 09 803 L13—NETWORK ADMINISTRATION AND MANAGEMENT

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

I. (a) What are the needs of Network Management ?

(b) List out the functionalities of network statistics management.

(c) What do you mean by TMN Conceptual model ?

(d) How process management done in Windows NT ?

(e) How Network Management and debugging done in Linux OS ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

II. (a) List out different network management tools. Discuss.

(b) Discuss about Commercial network management system.

(c) Discuss management information of SNMP.

(d) Write a note on MIB.

(e) How group management done in RMON ?

(f) What are the security issues in Windows NT ?

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

III. (a) Explain network monitoring architecture in detail.

Or

(b) Explain network management goals, organization and functions.

IV. (a) Briefly discuss about SNMP V2 architecture ? How does it differ from SNMP V1 ?

Or

(b) List out different message types of SNMP V1 Protocol ? Discuss in detail.

V. (a) Write a note on RMON Concepts and alarms.

Or

(b) Explain in detail ARM Network Management.

VI. (a) How network Configuration done in Window NT System ? Explain in detail.

Or

(b) Write a note on Routing and supporting Network hardware in Linux OS.

(4 × 10 = 40 marks)

C 81427 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, APRIL 2020

Information Technology Engineering

IT 09 801—MOBILE COMMUNICATION SYSTEM

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1 List the features of third generation system.

2 Define the parameters of satellite communication.

3 Mention the security measure used in telecommunication system.

4 Mention the use of adaptation protocol.

5 What is meant by selective retransmission ? When is it used ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain the frequency hopping mechanism with an example.

7. With a neat sketch, explain the working of FDM and TDM techniques.

8. Write about the working of cordless system.

9. Explain the working of the spread spectrum LANs.

10. Explain the reverse tunneling mechanism with an example.

11. Write a note on snooping TCP.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12 a) Explain the various modulation technique in detail.

Or

b) Explain the working of cellular network in detail.

Turn over

13. a) With a neat sketch, explain the GSM Architecture.

Or

b) Explain in detail about the working of IEEE 802.16 protocol.

14. a) Explain the working of IEEE 802.11 protocol in detail.

Or

b) Explain the working of Bluetooth Technology.

15. a) Explain the working of Ad-Hoc Networks.

Or

b) Explain the IPv6 protocol header and its working with a neat diagram.

(4 × 10 = 40 marks)

C 81424 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, APRIL 2020

Electrical and Electronics Engineering

EE/PTEE 09 804 L19—POWER QUALITY ISSUES AND REMEDIAL MEASURES

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What are the issues faced by power systems and which can be termed as power quality problems ?
2. What are the major causes for power supply interruptions ?
3. Mention the problems created by harmonics.
4. What is the advantage of three phase converter ?
5. What are the contributions of UPS for lower quality in power supply ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain the term Power quality.
7. Discuss the long duration variations characteristics of power quality issue.
8. Explain the origin of short interruptions.
9. Differentiate SVC and STATCOM.
10. Explain the characterisation of electric power quality.
11. Write in brief the requirements NEC grounding.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 10 *marks.*

12. Explain IEEE and IEC standards for power quality.

Or

13. Using appropriate examples demonstrate the effect of any two reliability indices.

14. How does voltage sag affect different equipments in industries ? Explain it.

Or

15. What are the few types of equipment, which contribute to harmonics in the power quality ?

16. Explain the different types of power factor improvement techniques.

Or

17. With the help of a neat diagram explain realisation and control of STATCOM.

18. Write a detailed note on the role of three phases four wire system in power quality.

Or

19. Discuss the dynamic voltage restorers for sag and flicker problems.

(4 × 10 = 40 marks)

C 81415 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, APRIL 2020

Electronics and Communication Engineering

EC/PTEC 09 804 L09—MULTIMEDIA COMMUNICATION SYSTEMS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What are the most important ATM capabilities for multimedia requirements ?
2. What is color subsampling ?
3. Give the temporal picture structure.
4. What is the principle of Open Shortest Path First (OSPF) protocol ?
5. Name the two approaches for rate-control technique.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. From the network point of view, what are the most important requirements of multimedia communications.
7. With neat sketch, explain the perceptual audio coder architecture.
8. Explain the significance of Image Compression.
9. Explain VOP texture coding process.
10. Explain the Resource Reservation Protocol (RSVP).
11. Explain the reconstruction of silence in NTI scheme.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Explain the Multimedia Communication system model.

Or

(b) How the problem of converting acoustic speech to mouth shape parameters can be solved ? Explain.

13. (a) Discuss the challenges of multimedia information processing.

Or

(b) (i) With illustration, explain the motion compensated coding of interframe macroblocks.

(ii) Explain the features of Watermarking.

14. (a) Discuss in detail about MPEG-1 standard.

Or

(b) Explain the MPEG-4 video requirements for the following functionalities :

(i) Content-based interactivity.

(ii) Compression.

(iii) Universal Access.

15. (a) Explain in detail about the distributed multimedia systems.

Or

(b) Discuss in detail about Error-resilience techniques for real-time video transport.

(4 × 10 = 40 marks)

C 81403 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, APRIL 2020

Chemical Engineering

CH/PTCH 09 804 L24—INDUSTRIAL POLLUTION CONTROL

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

The question paper has three parts, **Part A, Part B** *and* **Part C.** *Answer any* **five** *questions from Part A,* **four** *questions from Part B and* **five** *questions from Part C.*

Part A

Answer **all** *questions.*

Each question carries 2 *marks.*

1. List the sources of waste water.
2. Differentiate incineration and pyrolysis and explain.
3. Write the scope and purpose of EIA
4. Explain how odour can be measured.
5. Differentiate COD, BOD and ThOD.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

Each question carries 5 marks.

6. Give the classification of pollutants and write any *two* specific pollutants in each category
7. List any *five* industries and specify the nature of pollution from them along with the effects of pollutants from these industries on human beings.
8. Explain the two main laws associated with air pollution in India citing their scope and genesis.
9. Define environmental audit citing its objectives. Explain the purpose of compliance audit.

10. Differentiate between ETP, STP and CETP. List the major treatment unit to be provided for the treatment of tannery wastes.

11. Define hazardous wastes and explain their characteristics.

(4 × 5 = 20 marks)

Part C

Answer any **one** *question from each module.*
Each question carries 10 *marks.*

Module I

12. Explain UASB used for waste water treatment along with the design parameters.

13. Explain the activated sludge process with a neat sketch citing the important parameters that govern its functioning.

Module II

14. Enumerate the sources of water pollution from food and beverage industries and explain the treatment methods for the above.

15. Explain the methods for the abatement of pollution in nuclear power plant wastes.

Module III

16. Explain the various methods of sampling of gaseous air pollutants citing their merits and demerits.

17. Write the sources of air pollutants from fertilizer, pulp and paper and petroleum industries along with their effects on vegetation.

Module IV

18. Explain the various engineering controls for noise control in industries.

19. Explain the methods for sludge treatment in STP's and ETP's.

(4 × 10 = 40 marks)

C 81389 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, APRIL 2020

Applied Electronics and Instrumentation Engineering

AI 09 803 L24—MOBILE COMMUNICATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What were the limitations of conventional mobile telephone systems ?
2. Define ground incident angle and ground elevation angle.
3. What is access channel and paging channel ?
4. What are the access techniques available to share bandwidth in wireless communication ?
5. Define frequency management.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Write short notes on frequency reuse schemes and distances.
7. Why is there a constant standard deviation along path-loss curve ?
8. What are the steps involved in finding the antenna height gain of path loss model ?
9. What is forced hand-off ? How it can be created and controlled ?
10. Brief about FDD and TDD techniques with diagram.
11. List and explain the various GSM features.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12. (a) Explain the operation of cellular systems in detail.

Or

(b) Derive an expression of C/I from a normal case in an omnidirectional antenna system.

13. (a) How mobile signal propagation over water takes place ?

Or

(b) Discuss about the concept of spatial time correlation and power spectrum of complex envelope in mobile to mobile propagation.

14. (a) Elaborate in detail about the set-up channels in cellular system. Discuss about the access channel.

Or

(b) Elucidate how two hand-off level algorithm works ? List the advantages of delayed hand-offs.

15. (a) Explain in detail about the concept of Frequency Division Multiple Access.

Or

(b) Discuss in detail about the capacity of cellular CDMA systems.

(4 × 10 = 40 marks)

C 80022 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2020

Computer Science Engineering

CS/IT 14 804 A—ADVANCED TOPICS IN OPERATING SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten :

1 Describe the functions of operating system.

2 Write the Types of Advanced operating system in detail.

3 List and detail the issues in Distributed operating system.

4 What are requirements of mutual exclusion algorithms and how would you measure the performance of these algorithms.

5 Explicate the deadlock handling strategies in distributed systems and the issues in deadlock detection and resolution.

6 Describe the basic approaches for backward error recovery.

7 What are the forms of memory coherence and the cache coherence in PLUS system ?

8 Describe the sender initiated and receiver initiated load distributed algorithms.

9 List and explain the different threads in Multiprocessor Operating System.

10 Discuss the structure of multiprocessor operating system.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 What are concurrent processes and how do they interact ? Explain how concurrent processes resolve the critical section problem.

Or

12 Explain how monitors schedule access to shared objects in multiprogramming environment.

13 Write the Lamport and Ricart-Agrawala algorithm for mutual exclusion.

Or

14 Describe how path-pushing and edge chasing algorithms detect deadlock.

Turn over

15 Explain in detail the algorithms for implementing Distributed Shared Memory.

Or

16 Discuss in detail the Majority based dynamic voting protocol with an example.

17 Explain how process synchronization is achieved in multiprocessor operating system.

Or

18 Detail how Mach operating system manages memory.

(4 × 15 = 60 marks)

C 80018 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2020

Civil Engineering

CE 14 804 E—REMOTE SENSING AND GIS

Time : Three Hours Maximum : 100 Marks

Part A

I. Answer any *eight* questions out of ten :

1 Explain EMR interaction with atmosphere.

2 Define Stefen Boltzmann theory.

3 Give a note on radiance.

4 State the principle of microwave remote sensing.

5 Explain about radar.

6 Give a note on buffering.

7 Explain about printers and plotters.

8 Write a note on water resources.

9 Give a few applications on remote sensing.

10 Describe hazard mitigation.

(8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

11 Describe spectral signature curves.

Or

12 Explain the scattering of EMR.

13 What is resolution of sensor ? Describe all sensor resolution.

Or

14 Explain in detail about the Airborne and space borne TIR and microwave sensors.

15 Specify in detail the types of projection.

Or

16 Differentiate raster and vector data analysis.

17 Explain about multi-spectral image classification techniques.

Or

18 Describe image enhancement techniques.

(4 × 15 = 60 marks)

D 71905 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION NOVEMBER 2019

Computer Science and Engineering

CS/PT CS 09 803 L15—MULTIMEDIA

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1 Define Multimedia with suitable examples.

2 What is the message received by all MIDI devices ?

3 What is the animation ? List three animation packages used.

4 Calculate the size in MB for a 1 minute stereo recording of CD quality music at 55.1 kHz sampling rate and 32 bit resolution.

5 Define distributed multimedia system.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain the process of synchronization in distributed environment.

7. Explain how information is transmitted between MIDI devices.

8. Explain in detail how MPEG is used compress audio.

9. Explain the various functionalities of Image Editing.

10. Explain in detail about Video Conferencing.

11. Explain the components of sound blaster card with a neat sketch.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 10 *marks.*

12 (a) Explain in detail about multimedia database and also explain the characteristics of MDBMS.

Or

(b) Describe the concepts, frameworks, issues and techniques in multimedia authoring.

13. (a) Define MIDI and describe its attributes. Compare MIDI with digitized audio in multimedia production.

Or

(b) Explain the process of audio and video production in multimedia.

14. (a) Explain in detail how MPEG is used compress both video and audio. Also give the respective data streams.

Or

(b) Discuss about the various authoring tools depending on the application design

15. (a) Describe distributed multimedia systems. What are the components available in distributed multimedia system ? Explain in detail.

Or

(b) How group communication is preferred in centralized or distributed control in multimedia computer co-operative work (CSCW) ? Explain its architecture.

(4 × 10 = 40 marks)

D 71893 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION NOVEMBER 2019

Civil Engineering

CE/PTCE 09 804 L18—ADVANCED CONSTRUCTION ENGINEERING AND MANAGEMENT

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

Each question carries 2 *marks.*

1. State the reasons of project failure.
2. List the properties of geotechnical materials.
3. What is the use of haul trucks ?
4. When is ready mixed concrete preferred ?
5. State the importance of quality.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

Each question carries 5 *marks.*

6. Discuss on graphical presentation.
7. Discuss on the selection of equipment.
8. Explain the significance of light weight concrete.
9. Elaborate on transporting and placing methods.
10. Compare and contrast hot and cold weathering.
11. Describe total quality management and its importance.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

Each question carries 10 *marks.*

12. (a) Discuss on project development process.

Or

(b) Give a detailed account on depreciation and replacement methods.

Turn over

13. (a) Elaborate on structure and materials for flexible pavement construction.

Or

(b) Describe compaction specification and control.

14. (a) Elucidate on different types of mixers.

Or

(b) Enunciate on underwater concreting.

15. (a) Describe the parameters to be controlled for project.

Or

(b) Discuss on quality assurance techniques.

(4 × 10 = 40 marks)

C 62822 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE EXAMINATION, APRIL 2019

Mechanical Engineering

ME 14 805 A—QUALITY ENGINEERING AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1 Explain how customer satisfaction level is assessed in an industry and in a service organization.

2 State the objectives of Quality circles and discuss the information takes place during Quality circle meetings and also explain their operation.

3 Distinguish between Kaizen and Deming's approach.

4 Discuss the reasons for Bench marking and explain six important steps in the process of bench marking.

5 Explain the use of Quality function deployment (QFD) for launching a new product.

6 Draw and discuss a Fish bone diagram for a product of your choice.

7 Does an np-chart provide any different information than p-chart ? Why an np-chart be used ?

8 Consolidate the different control chart and describe the features of any two.

9 Discuss about bathtub curve and state its advantage.

10 Compare single and double sampling plans.

(8 × 5 = 40 marks)

Part B

11 (a) Explain the fourteen steps of Deming's philosophy for improving quality, productivity and competitiveness.

Or

(b) Discuss about customer satisfaction and retention with a case study.

12 (a) Explain seven traditional tools of quality in detail with example.

Or

(b) Discuss in detail about the FMEA team and FMEA documentation.

Turn over

13 (a) Name the common statistical tools that are used in industries. How would you identify the "Vital few" causes in your approach to a problem solving ?

Or

(b) The following data (Table 1) are obtained from an automatic filling process of a certain chemical delivered into a container. The sample size was 3.The specification for the weight of the filled in container is 50 ± 4 grams :

Table 1

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	51	52	51	48	53	51	52	54	53	50	49	54	51	53
x2	50	53	52	49	49	49	53	52	53	52	49	54	51	50
x3	52	52	52	52	49	49	47	51	52	52	52	53	54	52

(i) Setup X and R control charts. Is the process under control ?

(ii) Determine whether the process meets the specifications.

14. (a) A doctor's clinic evaluates incoming disposable cotton-tipped applicators using the single sampling plan N 8000, n = 62, and c = 1.

(i) Construct the OC curve using about 7 points.

(ii) Determine the AOQ curve and the AOQL.

Or

(b) A leading computer firm uses a sampling plan of n = 50 and c = 0 regardless of lot sizes. Construct OC and AOQ curves. Graphically determine the AQL value for α = 0.05 and the AOQL value.

(4 × 15 = 60 marks)

C 62821 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Mechanical Engineering

ME 14 804 C—ENERGY ENGINEERING AND MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Explain various forms of energy and Law of conservation of energy.
2. Point out the elements of energy management in detail.
3. State the various principle of Energy Management.
4. Differentiate Fluidized bed combustion with Fluidized bed boilers.
5. Write a short note on pumped hydro storage system.
6. Order the parts of storage system.
7. Justify the merits of waste heat recovery system.
8. Define Energy Management.
9. Summarize the cost techniques.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

10. Brief notes on World energy consumption with suitable example.

Or

11. Deliberate the brief notes on Energy Policy.
12. Write notes on :
    (a) Energy survey.
    (b) Energy Cost.

Or

13. Briefly describe the Energy conservation in engineering and process industry.

Turn over

14. Brief notes on Fluidized bed combustion.

Or

15. Discriminate the Wind Energy Collector and storage system with neat sketch.

16. Evaluate the Computerized Energy Management system.

Or

17. Explain about the financial appraisal and profitability.

(4 × 15 = 60 marks)

C 62820 (Pages : 4) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Mechanical Engineering

ME 14 803—OPERATIONS MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Explain production and operations management scope.
2. Discuss about the standardization of product.
3. Describe any *one* method of forecasting with its advantages and disadvantages.
4. Elaborate about process design and planning with example.
5. Explain the flexible manufacturing system with examples.
6. Holding costs are 35 MU/unit/year. The ordering cost is 120 MU/order and sales are relatively constant at 400 month :
   (a) What is the optimal order quantity ?
   (b) What is the annual total inventory cost ?
7. Explain, how does master scheduling differ under manufacturing strategies of make-to-stock, and make-to-order.
8. Consider the following single machine-scheduling problem :

Job (j)	:	1	2	3	4	5
Processing time (t) (hrs)		15	4	5	14	8

   Find the optimal sequence, which will minimize the mean flow time and also obtain the minimum mean flow time.
9. Describe the basic concepts and purpose of maintenance.
10. Elaborate the steps on solving minimal spanning tree problem.

(8 × 5 = 40 marks)

Turn over

Part B

Answer **all** *questions.*

Each question carries 15 *marks.*

11. (a) Discuss the types of production systems with example.

Or

(b) The past data about the load on a stamping center are as follows :

Month Load	Machine hours
May 2009	584
June 2009	610
July 2009	655
August 2009	747
September 2009	862
October 2009	913
November 2009	913

12. (a) Discuss types of machine cells, cell layout and the key machine concept.

Or

(b) A company is evaluating Coimbatore and Chennai as alternative location for a new plant to manufacture small business computers. The following rating factors and scores have been prepared :

Locational Factor	Factor	Location	
	Weight	Coimbatore	Chennai
Cost per computer	0.60	Rs. 39,000	Rs 43,000
Cost of living	0.10	0.60	0.60
Labour availability	0.10	0.70	0.70
Union activities	0.15	0.40	0.60
Proximity to similar industry	0.10	0.70	0.50
Local transportation systems	0.05	0.70	0.70

Which location would you recommend ? Why ? What are advantages and disadvantages of the method you have applied to compare the two alternative locations ?

13. (a) Explain the steps of strategy and guidelines with case study.

Or

(b) A manufacturer of three products tries to follow a policy of producing those which continue most to fixed cost and profit. However, there is also a policy of recognising certain minimum sales requirements currently, there are :

Product	:	x_1	x_2	x_3
Units per week		20	30	60

There are three producing departments. The product times in hour per unit in each department and the total times available for each week in each department are :

Departments	Time required per product in hours			Total hours available
	x_1	x_2	x_3	
1	0.25	0.20	0.15	420
2	0.30	0.40	0.50	1048
3	0.25	0.30	0.25	529

The contribution per unit of product x_1, x_2, x_3 is Rs. 10.50, Rs. 9.00 and Rs. 8.00 respectively. The company has scheduled 20 units of x_1, 30 units of x_2 and 60 units of x_3 for production in the following week, you are required to state :

(i) Whether the present schedule is an optimum one from a profit point of view and if it is not, what it should be ;

(ii) The recommendations that should be made to the firm about their production facilities (following the answer to (i) above).

14. (a) Elaborate about maintenance and replacement with examples.

Or

An electronics firm has signed a contract to install an instru
irport. The complete installation can be broken down into fo
ctivity (labeled A through N), its predecessor activities, norm
nd cost are given below. The contract specifies that the insta
8 days. There is a penalty of Rs. 10,000 per day beyond the

Activity	Predecessor activities	Normal time (days)	Normal cost (Rs.)
A	–	3	32,000
B	–	5	55,000
C	–	6	57,500
D	A	7	75,000
E	A	4	42,000
F	B, D	2	18,000
G	C	4	42,500
H	A	8	85,000
I	C	5	57,500
J	C	7	67,500
K	E, F, G	4	40,000
L	H, I	6	65,000
M	L	3	28,000
N	J, K	5	52,500

(i) What is the normal time to complete the installation ?

(ii) What is the shortest possible time for completion of the

(iii) What is the most economical period of time in which to

(iv) What is the minimum total cost (installation plus pena

C 62819 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Mechanical Engineering

ME 14 802—POWER PLANT ENGINEERING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. State the advantages of regenerative cycle over the simple Rankine cycle ?
2. Discuss about open and closed gas turbine cycles ?
3. State any *four* boiler inspection procedures ?
4. Economizers are placed after the feed pump. Comment.
5. What is the effect of friction on the flow through a steam nozzle ? Explain with the help of an *h-s* diagram ?
6. What are the classifications of power plant condensers ?
7. What are the various components of gas turbine power plant ?
8. What are the ways to find depreciation cost ?
9. Write any *five* comparisons between nuclear power plant and thermal power plant ?
10. What are the disposal methods of nuclear waste ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (a) In a Rankine cycle, the steam at inlet to turbine is saturated at a pressure of 30 bar and the exhaust pressure is 0.25 bar. Determine :

- Pump work.
- Turbine work.
- Rankine efficiency.
- Condenser heat flow.
- Dryness at the end of expansion.

Or

Turn over

(b) A gas turbine unit has a pressure ratio of 6 : 1 and maximum cycle temperature of 610°C .The isentropic efficiencies of the compressor and turbine are 0.8 and 0.82 respectively. Calculate the power output in kilowatts of an electric generator geared to the turbine when the air enters the compressor at 15°C at the rate of 16kg/s.

Assume C_p = 1.005 kJ/kg. and γ = 1.4 for compression process and Assume C_p = 1.11 kJ/kg. and γ = 1.333 for expansion process.

12. (a) Discuss in detail about the boiler safety regulations ?

Or

(b) What are the different methods of controlling the superheat temperature and explain them with neat sketches ?

13. (a) Determine the throat area, exit area and exit velocity for a steam nozzle to pass 0.2 kg/s. when the inlet conditions are 12 bar and 250°C and the final pressure is 2 bar. Assume that the expansion is isentropic and the inlet velocity is negligible. Take n = 1.3 for superheated steam.

Or

(b) Draw the velocity diagram for a single stage impulse turbine and brief it ?

14. (a) Explain about boiling water reactor with neat sketch ?

Or

(b) A power station has a maximum demand of 90 MW and the daily load is as follows

Time (hrs.) :	0 - 6	6 - 9	9 - 12	12 - 14	14 - 18	18 - 22	22 - 24
Load (MW) :	40	60	70	60	80	90	40

I Determine the load factor

II What is the load factor of stand by equipment rated at 30 MW that takes all loads in excess of 70 MW ? Calculate its load factor.

(4 × 15 = 60 marks)

C 62818

Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE EXAMINATION, APRIL 2019

Mechanical Engineering

ME 14 801—MECHATRONICS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. Describe the details about multidisciplinary scenario.
2. Explain about regulators and its industrial applications.
3. Describe the details about analogous chart recorders
4. Describe about data logger.
5. Elaborate on LCD unit.
6. Illuminate on air relay and force balance.
7. Explain the applications of PI and IP converters.
8. Describe the coanda effect and its causes and remedies
9. Describe the functions of OR &NOR gates.
10. Explain in details about encoders and its types.

(8 × 5 = 40 marks)

Part B

11. (a) Describe in detail about scope and evolution of mechatronics.

Or

(b) Illustrate the applications of servo mechanisms and its principles.

12. (a) Explain about analog and digital indicators with its advantages and disadvantages.

Or

(b) Describe about the alarm indicators and its applications.

13. (a) Explain the functions of volume booster and flapper nozzle.

Or

(b) Explain about the proportional pneumatic controller and proportional plus integral plus derivative pneumatic control.

14. (a) Describe working principle of fluid logic control with neat sketch.

Or

(b) Describe in detail about cone jet proximity sensors and interruptiable sensors.

(4 × 15 = 60 marks)

C 62817 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electrical and Electronics Engineering

EE 14 805 A—SPECIAL ELECTRICAL MACHINES

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. What is a hybrid stepper motor ? Explain its operation and applications.
2. Summarize the principle of operation of a variable reluctance stepper motor.
3. What is the need for position sensor in SRM control ? Explain.
4. Discuss the various stator current modes in a synchronous reluctance motor in detail.
5. Differentiate between permanent magnet BLDC motor and permanent magnet synchronous motor.
6. Distinguish between self control and vector control PMSM.
7. State the cause for torque ripples in BLDC motors ? How to reduce torque ripples in BLDC motors ?
8. Elaborate an application of AC Servo motor.
9. Explain the principle of Universal motor.
10. Explain the significance of slotless linear synchronous motors.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

1. (a) Construct and evaluate the operation of single stack and multi-stack stepper motor with a neat diagram.

Or

(b) (i) With the help of a neat schematic diagram, explain the closed loop control of an SRM.

(ii) Explain the reasons for ripples in torque produced by the SRM. Also list various applications of SRM.

Turn over

2. (a) (i) Generalize the expression for the torque equation for the synchronous reluctance motor. (6 marks)

(ii) Investigate the performance of the synchronous reluctance motor with neat phasor diagram. (9 marks)

Or

(b) Derive the expression for power input and torque of a PMSM. Explain how its torque speed characteristics are obtained.

3. (a) Discuss the use of Hall sensors for position sensing in PMBLDC motor with necessary block diagram.

Or

(b) Derive the transfer function of AC servomotor and discuss its applications in detail.

4. (a) (i) Discuss the application of double sided linear induction motor for traction drives. (9 marks)

(ii) Explain the construction and working of AC series motor. (6 marks)

Or

(b) (i) Discuss the operating principle and applications of linear synchronous motors. (7 marks)

(ii) Explain the construction and working of attraction type linear levitation machine. (8 marks)

[4 × 15 = 60 marks]

EIGHTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE EXAMINATION, APRIL 2019

Electrical and Electronics Engineering

EE 14 804 B—BIOMEDICAL ENGINEERING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

I. 1 How the bioelectric potentials are measured ? Name some of the equipments using such measurement.

2 Write different clinical applications of ECG.

3 Describe the Transducers for Biomedical Applications.

4 State and Explain the use of Einthoven triangle.

5 Write brief note on blood pressure.

6 What is the use of Hemodialysis machine ?

7 Explain about pulse sensor.

8 Mention the applications of MRI.

9 What are the principles of Ultrasonic Measurement ?

10 Write about accident prevention methods.

(8 × 5 = 40 marks)

Part B

Answer **all** *the questions.*

II. 1 (i) Explain briefly about resting and action potentials with necessary sketches.

(ii) With a neat sketch explain the function of nerve cell.

Or

2 (i) Explain about body surface electrodes and micro electrodes with neat diagrams

(ii) Define transducer. Differentiate active and passive transducer. Explain the working principle of any passive transducer.

3 (i) Describe the operation of ultrasonic blood flow meter.

(ii) Explain how blood flow can be measured using electromagnetic blood flow meter.

Or

4 (i) In what way demand pacemaker is different from stand by pacemaker.

(ii) What is the function of defibrillator ? Draw and explain the working principle of dc defibrillator.

5 Explain the working principle of Electro-encephalograph measurement with a block diagram.

Or

6 (i) Explain the physiology of respiratory system.

(ii) Write in detail about spirometer.

7 (i) Explain brief about fluoroscopy.

(ii) Explain the working principle of CT scan with block diagram.

Or

8 (i) Explain various methods of accident prevention with diagrams.

(ii) Explain in detail the components of bio-telemetry system with block diagram.

(4 × 15 = 60 marks)

C 62815 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electrical and Electronics Engineering

EE 14 803—POWER SYSTEM PROTECTION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

I. 1 Discuss the problem associated with the interruption of low inductive current if the fault is very near to the substation.

2 Discuss the selection of circuit breakers for different ranges of the system voltage.

3 Briefly discuss miniature circuit breaker.

4 Explain the impacts of contaminations in the electrical insulation.

5 Explain core less type reactor.

6 Discuss the term insulation co-ordination.

7 Discuss the merits and demerits of carrier blocking scheme compare to other type of carrier aided distance protection.

8 Compare permissive under-reach and over-reach transfer tripping schemes of protection.

9 Brief about the applications of microprocessor based relays.

10 What is frame leakage protection? Discuss its working principle and field of application.

(8 × 5 = 40 marks)

Part B

Answer **all** *the questions.*

II. 1 Explain the terms restriking voltage and recovery voltage. Derive the expression for restriking voltage and RRRV in terms of system voltage, Inductance and Capacitance.

Or

2 Describe with neat diagram the construction, operating principle and application of vacuum circuit breaker.

3 Describe the construction and working principle of : (i) expulsion type and (ii) valve type lightning arresters.

Or

4 Explain Why reactors are used in power system ? With suitable diagrams describe about the types of reactors.

5 Describe with neat sketch any one type in : (i) Electromechanical relay (ii) Transducer relay.

Or

6 Explain with neat schematic diagram of phase comparison carrier current protection.

7 Describe the realization of a directional over current relay using a microprocessor.

Or

8 Describe with neat sketch, the percentage differential protection for star-delta connected transformer

(4 × 15 = 60 marks)

C 62814 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electrical and Electronics Engineering

EE 14 802—FACT'S CONTROLLERS AND CUSTOM POWER DEVICES

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

Each question carries 5 *marks.*

I. 1 Outline the technical benefits of FACTS technology.

2 Explain the power flow considerations of a transmission interconnected systems.

3 Describe the switched transients in thyristor switched capacitor ?

4 Explain the significance of controllable VAR generation.

5 Discuss the objectives of series compensation.

6 Explain the power quality issues.

7 Discuss the source and effects of unbalance.

8 Write short notes on AC regulator.

9 Discuss the merits of active filters.

10 Write briefly about inphase compensation.

(8 × 5 = 40 marks)

Part B

Answer **all** *the questions.*

Each question carries 15 *marks.*

II. 1 Explain the working of Static Var Compensator with neat diagram and waveforms.

Or

2 (a) Describe the basic thyristor switched capacitor and its operation ; and (b) Explain the power oscillation damping in shunt compensation.

Turn over

3. (a) Discuss the operation of STATCOM with a neat diagram and characteristics.

   (b) Write a short note on transient stability enhancement using STATCOM and SVC.

Or

4. (a) Enumerate the basic operating control schemes of TSSC and TCSC.

   (b) Discuss the effect of series capacitive compensation in transmission lines.

5. Explain the following :

   (a) Sources of harmonics.

   (b) Harmonic Indices.

Or

6. (a) Define and explain flicker, impulse, spike and swell.

   (b) Compare the long term and short term power quality issues.

7. Explain in detail about the voltage regulation using DSTATCOM with relevant diagrams.

Or

8. Draw and explain the schematic diagram, structure and control of a right shunt UPQC.

(4 × 15 = 60 marks)

C 62813 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electrical and Electronics Engineering

EE 14 801—ELECTRICAL SYSTEM DESIGN

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

I. 1 Discuss the safety aspects in electrical installations.

2 Differentiate TN and TT systems.

3 Explain how the protection is done against overload.

4 Define the following :

(i) Maintenance factor.

(ii) Absorption factor.

5 State and explain the general rules for interior lighting ?

6 Brief about, how to design standby generating units.

7 Discuss the different factors considered for selection of cable.

8 Write short notes on testing of HT cables.

9 Write short notes on Shielding of electric systems.

10 Compare MCCB and ACB.

(8 × 5 = 40 marks)

Part B

Answer **all** *the questions.*
Each question carries 15 *marks.*

II. 1 State the purpose of earthing ? Explain the design of pipe earttring with neat diagram.

Or

2 With neat schematic and layout of a small residential building and estimate the wiring materials required.

Turn over

3 A lamp of 500cp is placed 2 m below a plane mirror which reflects 80% of light falling on it. Determine illumination at a point 5 m away from the foot of the lamp which is hung 5m above the ground

Or

4 Write short notes on (i) Office building lighting (ii) Interior lighting.

5 Explain with neat sketch showing all details for a typical house wiring scheme commencing from the senrice connection.

Or

6 Explain the Electrical design concept of a Hospital.

7 Draw and brief the schematic diagram of 16 MVA - 110/11KV outdoor substation having one incoming and 2outgoing feeders ?

Or

8 Explain the following earthing methods :

(i) Rod earthing .

(ii) Plate earthing.

(4 × 15 = 60 marks)

C 62812 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Information Technology

IT 14 804 (D)—MANAGEMENT INFORMATION SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 5 *marks.*

1. Explain the levels of management.
2. Describe problem solving techniques.
3. Compare Intranet and Extranet with examples.
4. Discuss the various communication media.
5. Explain the characteristics of MIS.
6. Compare GDSS and DSS.
7. Explain the various kinds of information system.
8. Elaborate the characteristics of quality information.
9. Explain the steps involved in business system planning.
10. Explain the steps involved in organization of data.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*

Each question carries 15 *marks.*

11. (A) Explain the framework of information system and elaborate on management functions.

Or

(B) Explain the phenomena of problem solving using system approach.

12. (A) Explain the different types of network with suitable examples.

Or

(B) Explain the various wireless technologies.

13. (A) What is MIS ? Explain why and where an MIS system is needed.

Or

(B) Explain about Transaction Processing System and Office Automation System.

14. (A) Explain information system planning along with its organization.

Or

(B) Explain the various information system issues in detail.

(4 × 15 = 60 marks)

C 62811

Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE EXAMINATION, APRIL 2019

Information Technology

IT 14 803—NATURAL LANGUAGE PROCESSING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

1. What are the different forms of knowledge related to natural language understanding ?
2. Differentiate syntax, semantics and pragmatics.
3. Compare linguistic and world knowledge.
4. What is a simple grammar ? Write the rules for constructing a tree.
5. Differentiate top down and bottom up parsers.
6. Write the rules for parsing with features.
7. List the types of inference used in natural language systems.
8. Mention the merits and demerits of primitive based knowledge representations.
9. Write the procedure for formulating the search space.
10. Give any two applications for black board model for problem solving.

(8 × 5 = 40 marks)

Part B

1. (A) Explain the applications of natural language processing system.

Or

(B) Illustrate the complexity of evaluating language understanding system using examples.

2. (A) Draw a search tree and explain depth first parsing strategy using an example.

Or

(B) Explain shift reduce parser and list its advantages.

3. (A) Explain the classification of knowledge representation schemes.

Or

(B) Give an example for production and explain its working.

4 (A) Describe the architecture of black board model.

Or

(B) Explain planning using least commitment principle.

(4 × 15 = 60 marks)

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Information Technology

IT 14 802—MOBILE COMMUNICATION SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Write a brief note on cellular network organisation.
2. List and explain the various performance metrics used in decision making in handoff.
3. Draw and explain IEEE 802.16 protocol architecture.
4. Briefly explain bluetooth protocol stack.
5. Compare IPv4 and IPv6.
6. Explain working of DHCP.
7. List and explain fragment life cycle events.
8. What do you mean by Intent resolution ? Explain the steps involved in intent resolution process.
9. List and explain the advantages of CDMA.
10. Draw and explain DECT protocol architecture.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (a) Draw and explain GSM Network architecture. (8 marks)

    (b) Draw and explain IS-95 channel structure. (7 marks)

Or

12. (a) Explain IS-95 Forward Link and Reverse Link transmission. (8 marks)

    (b) Explain GSM signalling protocol architecture with a neat diagram. (7 marks)

Turn over

13. Explain in detail:

    (a) Frequency hopping spread spectrum.

    (b) Direct sequence spread spectrum. (15 marks)

Or

14. What is Bluetooth ? Illustrate and explain various bluetooth usage models. (15 marks)

15. (a) What is Mobile IP ? Write a short note on Mobile IP Encapsulation. (8 marks)

    (b) Briefly explain the usage of WAP. Also illustrate the key components in a WAP environment (7 marks)

Or

16. (a) Draw and explain WAP Protocol Stack. (8 marks)

    (b) Explain the working of DSDV routing algorithm. (7 marks)

17. Briefly explain :

    (a) Activity Life cycles.

    (b) Activity Stacks.

    (c) Activity States. (15 marks)

Or

18. (a) Write a note on Layout Managers ? List and explain the commonly used layout classes available in the Android SDK. (8 marks)

    (b) List and explain Android Fragment classes. (7 marks)

[4 × 15 = 60 marks]

C 62809 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electronics and Communication Engineering

EC 14 805 C—CRYPTOGRAPHY AND NETWORK SECURITY

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Define Hill cipher with an example.
2. What is the role of S-box in DES ?
3. Differentiate between polyalphabetic cipher and mono alphabetic cipher.
4. What is the role of public key and private key in cryptography ?
5. What are the requirements of public key cryptography ?
6. Describe Euler's' theorem.
7. Compare transport mode and tunnel mode ESP.
8. What are the different requirements of a hash function ?
9. What are the functions of S/MIME ?
10. What are the applications of IPsec ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

MODULE 1

11. Explain the block cipher modes of operation in detail.

Or

12. Explain DES algorithm in detail.

MODULE 2

13. Briefly explain the different methods for distributing public key and private keys in key management.

Or

14. Explain Elliptic Curve cryptography in detail.

MODULE 3

15. Write down and explain the different steps involved in the SSL handshake protocol.

Or

16. Explain digital signature standard in detail.

MODULE 4

17. How confidentiality and authenticity is provided using PGP ?

Or

18. What is a firewall ? Explain the different types of firewall.

(4 × 15 = 60 marks)

C 62808 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electronics and Communication Engineering

EC 14 804 D—MOBILE COMPUTING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. With the help of a neat diagram, explain PCS architecture.
2. Explain FAMA with the help of an example.
3. Write brief notes on the two specifications of HIPERLAN.
4. Explain the major components in a centralized WLAN, with the help of a diagram.
5. Explain the differences between normal wireless network routing and ad hoc network routing.
6. Briefly explain the various alternative metric used in wireless networking.
7. Illustrate the working of a WAP gateway using necessary block diagram.
8. Write down any five features of Wireless Markup Language.
9. Define Hand off. How can it be effectively managed ?
10. How does the concept of mobile number portability work ?

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. (i) Write notes on :
    (a) GSM. (10 marks)
    (b) DECT. (5 marks)
    (ii) Distinguish between Digital Audio Broadcasting and Digital Video Broadcasting.

Or

12. Explain WCDMA-IMT 2000. (15 marks)
13. Explain the architecture of IEEE 802.11a and IEEE 802.11b standards. (15 marks)

Or

Turn over

14. With the help of necessary figures, explain IEEE 802.15 and IEEE 802.16 standards. (15 marks)

15. Explain with examples, the various categories of routing in wireless ad hoc networks. (15 marks)

Or

16. Explain the working of various wireless MAC protocols. (15 marks)

17. With the help of a figure, explain the WAP 2.0 standard. How does it differ from initial WAP standard ? (15 marks)

Or

18. Explain WAP architecture with the help of a neat diagram. (15 marks)

[4 × 15 = 60 marks]

C 62806 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electronics and Communication Engineering

EC 14 803—WIRELESS MOBILE COMMUNICATION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Distinguish between adjacent channel and co-channel interference.
2. Which are the various channel assignment strategies in cellular networks ?
3. Explain the models of mobile radio propagation with the help of necessary figures.
4. Explain frequency selective fading and time selective fading.
5. How is multi-user detection performed in CDMA ?
6. Briefly explain the concept of space time processing.
7. With the help of a figure, explain Wi-Max standard.
8. Explain the various radio link features in GSM.
9. How can the analysis of DSSS be performed ?
10. Explain the techniques for increasing capacity in cellular systems.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Explain hand-off in cellular networks. Also, explain the various hand-off strategies that can be used.

Or

12. Write notes on the various channel assignment strategies in cellular networks. Explain Trunking and Erlang capacity calculations.

Turn over

13. Elaborate on the impulse response model of a multi-path channel. Also, indicate the parameters used in a mobile multi-path channel.

Or

14. Write notes on frequency dispersion, multi-path delay spread and Doppler spread.

15. Explain with examples, DSSS and FHSS.

Or

16. With the help of a figure, explain the various components of a RAKE receiver.

17. Briefly explain methods used for multi-carrier communication.

Or

18. Write notes on : (a) GSM ; (b) Wideband CDMA ; and (c) WiFi.

(4 × 15 = 60 marks)

C 62805 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electronics and Communication Engineering

EC 14 802—ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Section 1 (Engineering Economics)

PART A

Answer any **four** *questions.*
Each question carries 5 *marks.*

1. Explain the various elements of cost.
2. State and explain Law of Demand and Law of Supply.
3. Explain Inflation and Deflation.
4. With suitable example, explain Simple Interest and Compound Interest.
5. How does discounting and compounding help in determining the sinking fund and Capital recovery ?

(4 × 5 = 20 marks)

PART B

Answer **all** *questions.*
Each question carries 15 *marks.*

6. (a) (i) Explain Fisher's effect.

   (ii) How should inflation be treated in the investment evaluation ?

   Or

   (b) (i) Explain GDP and GNP.

   (ii) Explain the factors affecting the price elasticity of Demand.

7. (a) (i) Illustrate the concept of Internal rate of return.

   (ii) AB limited is creating a sinking fund to redeem its preference capital ₹ 5 lakh issued on 6th April 2004 and maturing on 5th April 2015. The first annual payment will be made on 6th April 2004. The Company will make equal annual payments and expects that the fund will earn 12% per year. How much will be the amount of sinking fund payment ?

   Or

Turn over

(b) Explain the analysis of Equal-payment series present worth factor and Equal-payment series Capital recovery.

(2 × 15 = 30 marks)

Section 2 (Principles of Management)

PART A

Answer any **four** *questions.*
Each question carries 5 *marks.*

1. "Managing : Science or Art"—Justify your answer.
2. State and explain the difference between Formal and Informal organization.
3. How is finance function related to management functions ? Explain.
4. What purpose is served by the profit and loss statement ?
5. "Planning is looking ahead and control is looking back". Comment.

(4 × 5 = 20 marks)

PART B

Answer **all** *questions.*
Each question carries 15 *marks.*

6. (a) Explain the Evolution of management theory.

Or

(b) Identify five decision problems and recommend programmed or non-programmed decisions. If the examples are from an organizational setting, did they occur at upper or lower levels.

7. (a) Your father has promised to give you 1,00,000 in cash on your 25th birthday. Today is your 16th birthday. He wants to know two things :

   (i) If he decides to make annual payments into a fund after one year, how much will each have to be if the fund pays 8 percent ?

   (ii) If he decides to invest a lump sum in the account after one year and let it compound annually, how much will be the lump sum be ?

   (iii) If in (i) the payments are made in the beginning of the year, how much will be the value of annuity ? Assuming that interest is 8 percent in each case.

Or

(b) Discuss in detail about the various aspects of Marketing.

(2 × 15 = 30 marks)

C 62804 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Electronics and Communication Engineering

EC 14 801—DATA AND COMMUNICATION NETWORKS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Define symmetric Queues.
2. Draw the layered architecture of a Data Networks.
3. How do you control the congestion of a data communication networks ?
4. What is ARQ ? Were it is used ?
5. List adavantages of broadcast algorithm.
6. Illustrate how parity code check detect errors.
7. Explain the working of a tocken ring network.
8. Draw the structure of a Ethernet frame.
9. What is circuit switching ? Explain.
10. Explain the concept of Lee's approximation.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. From fundamentals, derive the expression for Little's formulae to deal with queueing models.

Or

12. Explain how the OSI standard architecture has been evolved for computer communication networks.

Turn over

13. With appropriate diagram, explain the working of a sliding window protocol implementatiom.

Or

14. What are the important routing algorithms used in practice ? With appropriate diagram explain any *two*.

15. With suitable diagrams, explain the working of IEEE 802.11 standard.

Or

16. Draw the structure of a an ATM networks and explain briefly.

17. Define Erlang formulae. From fundamentals, derive the expression for Erlang formulae.

Or

18. What is GoS ? With a neat sketch, explain the process involved in GoS.

(4 × 15 = 60 marks)

C 62799 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Computer Science Engineering

CS/IT 14 801—COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Explain about different benchmarks used in performance measurement.
2. Explain the role of compilers.
3. What is the need for dynamic scheduling ?
4. Briefly describe about data hazards and how to minimize them.
5. Write short note on virtual memory protection.
6. Write a note on handling cache misses.
7. Distinguish between uniprocessor and multiprocessor systems.
8. Write a note on performance on interconnection networks.
9. Describe in short about encoding an instruction set.
10. Write a note on the performance of UNIX filesystem.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Why are addressing modes used ? List and explain various data addressing modes. (15 marks)

Or

12. (a) Explain quantitative principles of computer design. (8 marks)
    (b) Define compiler. Draw and explain the structure of compilers. (7 marks)
13. Explain the three different types of dependences. (15 marks)

Or

Turn over

14. With a neat sketch explain in detail about vector processing and its architecture. (15 marks)

15. (a) Discuss the steps involved in designing an I/O system in detail. (8 marks)

(b) What do you mean by hit time ? Explain the three ways for reducing hit time. (7 marks)

Or

16. Write short notes on :

(a) Merging write buffer to reduce miss penalty. (5 marks)

(b) Hardware prefetching of instructions and data to reduce miss penalty or miss rate. (5 marks)

(c) Compiler-controlled prefetching to reduce miss penalty or miss rate. (5 marks)

17. Explain in detail about different types of multiprocessor systems. (15 marks)

Or

18. Compare the three multiprocessor hardware organizations. (15 marks)

[4 × 15 = 60 marks]

C 60834 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Mechatronics

MT 14 804 D—INDUSTRIAL SAFETY AND ENVIRONMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

1. Explain briefly about safety suggestion schemes.
2. Confer the term Cost of accidents.
3. Explain briefly what is meant by Injury and Accident.
4. Briefly explain the precautions to be taken while operating chains.
5. Briefly discuss about ergonomics aspects in assembly concepts.
6. Briefly explain about safety consideration in material handling process.
7. Briefly discuss about safety consideration for petroleum industries.
8. Write short notes on: Safety in distilleries industries.
9. Discuss Legal aspect. of Air pollutions.
10. Briefly explain about Environmental Pollution Act.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

11. Explain the role, need types and advantages of safety committees in manufacturing sectors.

Or

12. Discuss in detail about safety education and training programs in any industry.
13. Explain the safety consideration to be taken in material handling devices such as Hooks, clamps and arresting gears.

Or

Turn over

14. Discuss the operation and maintenance of Industrial trucks.

15. Explain the specific safety consideration for cement.

Or

16. Discuss the safety and handling storage of pipeline transport.

17. Explain the good and bad effects of water pollution and Noise Pollution.

Or

18. Confer the terms :

    (i) Mines Act and rules. (7 marks)

    (ii) Indian Motor vehicles Act and rules. (8 marks)

[4 × 15 = 60 marks]

C 60755 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2014 SCHEME] EXAMINATION, APRIL 2019

Biomedical Engineering

BM 14 804 A—ARTIFICIAL ORGANS AND IMPLANTS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*
Each question carries 5 *marks.*

I. 1 What do you mean by artificial organ ? Explain.

2 What is biomaterial ? Give examples.

3 List few important properties of biomaterials.

4 Write short notes on heart valves.

5 What is oxygenator ? Explain.

6 Explain about artificial heart.

7 What is dialysis ? Explain.

8 Explain about artificial liver.

9 What is orthopaedic device ?

10 What is limp prosthesis ? Explain.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 *marks.*

II. (a) What is biocompatibility ? Explain how to test the material for biocompatibility.

Or

(b) Describe about permanent artificial skin replacement in detail.

Turn over

C 24982 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2017

Information Technology

IT 09 803 L11—OPTICAL COMMUNICATION NETWORKS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. What is meant by optical line terminal ?
2. List the characteristics of the first generation optical networks.
3. What is meant by fairness control ?
4. Mention the advantages of using the SONET.
5. Mention the purpose of using Optical Internets.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Write about the working of the second generation optical networks.
7. Explain about optical line amplifiers.
8. Write about the working of the distributed protocols.
9. Explain about fault management in optical networks.
10. Explain about the optical layer services in detail.
11. Write about the working of FTTC in detail.

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

12. (A) Explain the WDM optical network architecture in detail and mention its applications.

Or

(B) Explain the MAC protocols used for broadcast and select networks.

Turn over

13. (A) Explain the working of the RWA algorithms in detail.

Or

(B) Write in detail about virtual topology design and its applications.

14. (A) Explain about the network survivability concepts in detail.

Or

(B) Explain in detail about network management functions.

15. (A) With an appropriate example, explain the working of the Source based multicast tree generation.

Or

(B) Explain the Burst switching and packet switching techniques with examples.

(4 × 10 = 40 marks)

C 24917 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. [ENGINEERING] DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2017

Biomedical Engineering

BM 09 804 L15—ARTIFICIAL ORGANS AND IMPLANTS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. What are the parameters that are used to find the compatibility of a biomaterial ?
2. Mention six important constraints for ideal hear valve construction.
3. What is meant by glomerular filtration rate ? Represent its standard value.
4. Why the need for total knee replacement surgery gets more importance ?
5. Mention the two sources of blood supply for liver.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Mention five organs that can be transplanted. Comment about the materials used for the construction of artificial organs.
7. Compare the characteristics of Tissue and Mechanical heart valves.
8. What are the functions of liver.
9. What are the requirements for total hip prosthesis.
10. Draw the structure of ear and elaborate its anatomy and physiology.
11. How is cosmetic implants different from the implants used for organs ?

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

12. (a) Explain in detail the working of cochlear implants and assists in hearing process.

Or

(b) How is the permanent artificial skin replacement done ? Explain with its advantages and limitations.

Turn over

13. (a) Mention the different types of oxygenators assisting the circulatory assist devices ? Explain the working of oxygenators in detail.

Or

(b) Discuss in detail about the engineering concerns and hemodynamic assessment of prosthetic heart valves.

14. (a) Draw the block diagram of peritonial dialyser and Explain its operation.

Or

(b) Draw and Describe about the Anatomy and Physiology of Kidney.

15. (a) Explain how total knee replacement surgery is carried with various knee prosthesis.

Or

(b) Discuss in detail about the externally powered prosthesis feedback technique assist the orthopedic system.

(4 × 10 = 40 marks)

C 24915 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2017

Biomedical Engineering

BM 09 803 L08—ADVANCED MEDICAL INSTRUMENTATION

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. What is Holier monitoring ?
2. Write a note on amplifiers.
3. Explain EEG.
4. What is oximeter ?
5. Mention the use of electron microscopy.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Explain about TMT system.
7. What is digital central monitoring ?
8. Brief about photo stimulators.
9. Write short notes on EEG.
10. Explain the applications of microprocessor based pulse oximeters.
11. Write short notes on blood gas analyser.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

12. (a) Explain in detail about microprocessor based ECG machines.

Or

(b) Describe the advanced computer based arrhythmia detection system.

13. (a) Explain the measurement of average auditory evoked potential and application.

Or

(b) Discuss about computerized tonometer and keratometers.

14. (a) Explain bipolar and retrapolar circuits in detail.

Or

(b) Explain the principle and applications of spirometer.

15. (a) Discuss about mass spectrometers and its significance.

Or

(b) Explain about scanning electron microscopy in detail.

(4 × 10 = 40 marks)

C 24913 (Pages : 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE [SUPPLEMENTARY] EXAMINATION, NOVEMBER 2017

Biomedical Engineering

BM 09 801—COMMUNICATION SYSTEMS

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. What is electromagnetic spectrum ?
2. Brief about SWR.
3. What is PAM ?
4. What is digital communication ?
5. Write a note on fiber optics.

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Write short notes on antennas.
7. Explain RF wave propagation.
8. Explain receiver parameters.
9. Explain base band transmission.
10. What is microwave communication ? Explain.
11. What is refractive index profile ? Explain.

(4 × 5 = 20 marks)

Turn over

Part C

Answer **all** *questions.*

12. (a) Explain in detail about classification of communications.

Or

(b) Explain in brief about theory and generation of PM and FM.

13. (a) Explain the followings : (i) AM receivers ; (ii) SSB receivers.

Or

(b) Explain about FM receiver, FM demodulators and FM noise suppression.

14. (a) Explain DPCM generation and demodulation.

Or

(b) Explain about telemedicine and its essential.

15. (a) Explain the general concepts of fiber optics and transmission characteristics of fibers.

Or

(b) Write short notes on optical transmitters and receivers.

(4 × 10 = 40 marks)

C 84210 (Pages : 2) Name.....

Reg. No.....

FIRST AND SECOND SEMESTER B.TECH. DEGREE (2014 SCHEME) SPECIAL EXAMINATIONS, APRIL 2020

EN 14 109—HUMANITIES AND COMMUNICATION SKILLS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **eight** *questions.*

Each question carries 5 *marks.*

1. Write down the following sentences by filling appropriate words :
   (a) He enters _____ the room.
   (b) Words are easier said _____ done.
   (c) They travelled _____ bus.
   (d) Mother looks _____ the baby.
   (e) He jumped _____ the river.
2. Role of education in modern society.
3. Impact of Science and Technology on the development of modern civilization.
4. Explain briefly different media of communication.
5. What are the attributes of a best speech?
6. Distinguish between bio-data and CV.
7. Distinguish between general objectives and specific objectives.
8. Briefly explain technical report writing.
9. Explain tension and stress. Which are the methods suitable to ease out stress?
10. Write a note on the rights and responsibilities of engineers.

(8 × 5 = 40 marks)

Part B

Answer any **four** *questions from the following four parts.*

Select only **one** *question from* **each part**.

Each question carries 15 *marks.*

I. (a) Correct and rewrite the following sentences :
   (i) It is time you answer my questions.
   (ii) All interest are paid without deduction of tax.

(iii) Radha was married with Krishnan.

(iv) What he was learning?

(v) This shirt is different than that.

(vi) Seetha is more beautiful over Radha.

(vii) His mother enquired on his friends.

(viii) If you work hard then you will pass.

(ix) All the details furnished is not sufficient.

(x) He was walking on the road when the accident happened.

Or

(b) Science and technology do more good than harm to society. Discuss.

(1 × 15 = 15 marks)

II. (a) Write a note on the legacy of Greek civilization.

Or

(b) Briefly explain the factors required for effective communication.

(1 × 15 = 15 marks)

III. (a) List out the points to be considered for effective written communication.

Or

(b) Explain the various components of technical report writing.

(1 × 15 = 15 marks)

IV. (a) Briefly present the inter relationship between human relations and professional ethics.

Or

(b) An awareness of responsibilities and rights of engineers leads to success in profession. Discuss.

(1 × 15 = 15 marks)