D 91113

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION, DECEMBER 2020

M.C.A.

MCA 18 405 E—SOFTWARE TESTING AND QUALITY ASSURANCE

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. Discuss the quality control and Quality Assurance at each phase of SDLC.
2. Discuss the requirement of software testing by explaining the important testing tools used.
3. (a) Explain the important considerations to be addressed in user interface testing.
   (b) State the Guidelines for Good GUI Design
4. (a) What is test scenario and Test Case ? Explain in detail with example.
   (b) What is the difference between stress, volume and load testing ? Explain
5. Explain the set of matrices used to evaluate software Quality.
6. (a) What is the difference between Quality Assurance, Quality Control and Testing ?
   (b) What is CMMI and what's the advantage of implementing it in an organization ?
7. (a) Explain the different maturity levels in a staged representation ?
   (b) What is back end testing using SQL ?

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D 91112

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION DECEMBER 2020

MCA

MCA 18 405 D—CLOUD COMPUTING

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*

Each question carries 20 *marks.*

1. Describe the features of a typical cloud computing environment in the perspective of each of Cloud Service Provider and users.
2. Explain the motivation, challenges and the seven-step model of Migration into a Cloud.
3. Explain the important aspects of Enterprise Cloud Computing and the needed technologies to form effective business drivers for a better market evolution.
4. Managing VMs in a pool of distributed physical resources is a key concern in laaS clouds. Substantiate the statement based on different VM models and VM management.
5. (a) Illustrate 'Cluster as a Service (CaaS)' as an effective cloud computing service.

   (b) Explain the technology implementation of a complete CaaS environment.
6. Do a critical analysis on the architecture of SAGA MapReduce framework that is used to implement scientific applications on cloud.
7. Discuss on different aspects of data security, privacy and risks in a cloud computing environment.

(5 × 20 = 100 marks)

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D 91111 **(Pages : 2)** **Name**.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION DECEMBER 2020

M.C.A.

MCA 18 405 (C)—OPERATIONS RESEARCH

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. (a) Discuss the applications of LPP in Business Domain. (5 marks)

   (b) Use the graphical method of solve the following LP problem.

   Minimize $Z = 20x_1 + 10x_2$
   subject to the constraints
   $$x_1 + 20x_2 \leq 40$$
   $$3x_1 + x_2 \leq 30$$
   $$4x_1 + 3x_2 \leq 60$$
   $$x_1, x_2 \geq 0.$$

   (15 marks)

2. Use Simplex method to solve the LPP :

   Maximize $Z = 10x_1 + 6x_2$
   subject to, $x_1 + x_2 \leq 2$
   $$2x_1 + x_2 \leq 4$$
   $$3x_1 + 8x_2 \leq 12$$
   $$x_1, x_2 \geq 0.$$

3. In a Textile sales emporium, four salesman A, B, C and D are available to four counters W, X, Y and Z. Each salesman can handle any counter. The service (in hour) of each counter when manned by each salesman is given below :

		A	B	C	D
Counter	W	41	72	39	52
	X	22	29	49	65
	Y	27	39	60	51
	Z	45	50	48	52

How should the sales man be allocated appropriate counters so as to minimize the service time ? Each salesman must handle only one counter.

Turn over

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4. A product is produced by 4 factories F_1, F_2, F_3 and F_4. The unit production cost are Rs. 2, 3, 1 and 5 respectively. Production capacity of the factories are 50, 70, 30 and 50 units respectively. The product is supplied to 4 stores S_1, S_2, S_3 and S_4, the requirements of which are 25, 35, 105 and 20 respectively. Unit cost of transportation are given below.

Find the transportation plan such that the total production and transportation cost is minimum.

		S_1	S_2	S_3	S_4
Factory	F_1	2	4	6	11
	F_2	10	8	7	5
	F_3	13	3	9	12
	F_4	4	6	8	3

5. Find an optimum integer solution to the following LPP :

Maximize $Z = x_1 + 2x_2$
subject to the constraints,

$$2x_2 \leq 7$$
$$x_1 + x_2 \leq 7$$
$$2x_1 \leq 11$$
$$x_1, x_2 >= 0 \text{ and } x_1, x_2 \text{ are integers.}$$

6. (a) Distinguish between Deterministic Dynamic Programming and Probabilistic Dynamic Programming. (10 marks)

(b) Explain how to solve Linear Programming Problem by Dynamic Programming Approach. (10 marks)

7. (a) Define the terms Server, Queue, Arrival rate, Service rate. (8 marks)

(b) A stenographer has 5 persons for whom she performs stenographic work. Arrival rate is Poisson and service times are exponential. Average arrival rate is 4 per hour with an average service time of 10 minutes. Find :

(i) The average waiting time of an arrival.

(ii) The average waiting length of waiting line.

(iii) The average time on arrival spent in the system.

(12 marks)

[5 × 20 = 100 marks]

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D 91110 **(Pages : 2)** **Name**.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION DECEMBER 2020

M.C.A.

MCA 18 405 B—ANDROID APPLICATION PROGRAMMING

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions*
Each question carries 20 *marks.*

I. A) Describe the folder and file structure of Android application project in Android studio. (10 marks)

B) Explain basic features of Android. (10 marks)

II. A) Describe Briefly the Android Application Architecture. (10 marks)

B) Explain different types of android applications. (10 marks)

III. What are views and view groups ? Give the Class/Sub-Class/pattern relationship between them. What are layouts ? List 5 view groups in Android user interface. Explain the ways to optimize the views. (20 marks)

IV. Assume that following Student table is used inside your application to persist the student related information.

ID(Integer)	Name(Text)	Branch(Text)
Not nullable	Not nullable	nullable

Provide a Java code snippet

a) To add the two record (with id = 1 and 3) in the table.

b) Retrieves all the contacts from the table.

c) Display all students' data with a Toast message.

d) Update the record with id = 2 to have Name as " Donald" and Branch as "Computer Science".

e) Delete the record with id = 3 from the table.

(20 marks)

Turn over

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V. A) Write code to send an SMS from a Smart Phone using Android. (10 marks)

B) Explain about permissions required

1) Get the location of the device. Finding a store on a street.

2) Allows an application to take screen shots and more generally get access to the frame buffer data.

(10 marks)

VI. A) Explain briefly which methods will help GPS for re-registration and write the code on how it works in android.

(10 marks)

B) What is meant by Services ? Design an android application that inputs the name of the location and locate the same in the Google map.

(10 marks)

VII. Which protocol is designed for short-range, low bandwidth peer to peer communications ? What are the important steps required to transfer message from one device to another nearby device ? Explain.

(20 marks)

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D 91109

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION DECEMBER 2020

M.C.A.

MCA 18 405 A—INFORMATION RETRIEVAL

(2018 Admissions)

Time : Three Hours | Maximum : 100 Marks

Answer any **five** *full questions.*

Each question carries 20 *marks.*

1. (a) Explain the different types of indexing for fast information retrieval.

   (b) Explain the classification methods and methods of association in detail.

2. Discuss the various files structures related with information retrieval.

3. Discuss in detail the different library and bibliogical system for information storage.

4. Discuss the various methods and issues in Distributed Information System.

5. Explain indexing, searching and querying in multimedia data bases.

6. What is OPACS in digital library Information Retrieval System?. Explain the Architecture of digital library Information Retrieval system in detail.

7. Write short notes on the following :

   (a) Single link algorithm.

   (b) Boolean Model.

   (c) Vector Model.

(5 × 20 = 100 marks)

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D 91108 **(Pages : 4)** **Name**.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION, DECEMBER 2020

M.C.A.

MCA 18 404—PRINCIPLES OF ACCOUNTING AND FINANCIAL MANAGEMENT

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. Following are the balances of Shri. Gupta as on 31st March, 2019 :

Debit Balances	Amount	*Debit Balances*	Amount
Cash in hand	540	Patents	7,500
Cash at bank	2,630	Salaries	15,000
Purchases	40,675	General expenses	3,000
Return inwards	680	Insurance	600
Wages	8,480	Drawings	5,245
Fuel and Power	4,730	Sundry Debtors	14,500
Carriage on sales	3,200	*Credit Balances*	
Carriage on purchases	2,040	Sales	98,780
Opening stock (1 April, 2018)	5,760	Return Outwards	500
Buildings	22,000	Capital	62,000
Freehold land	10,000	Sundry creditors	6,300
Machinery	20,000	Rent	9,000
Investments	10,000		

Taking into account the following adjustments prepare Trading and Profit/Loss account and Balance Sheet as on 31st March 2019.

(i) Closing stock Rs. 6,800.

(ii) Machinery to be depreciated at the rate of 10% and Patents at 20%.

Turn over

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(iii) Salaries for the month of March 2019 were unpaid Rs. 1,500.

(iv) Insurance includes a prepaid amount of Rs. 85.

(v) Bad Debts Rs. 725.

(vi) Rent received in advance Rs. 1,000.

(vii) Interest on investment Rs. 2,000 is accrued.

2. a) Following is the balance sheet of Aspire Ltd. for the year ending 31st December, 2019 :

Balance Sheet

Liabilities	Rs.	*Assets*	Rs.
Equity Share Capital	5,00,000	Land and Building	3,50,000
5 % Debentures	2,00,000	Plant and Machinery	2,50,000
Bank Loan	1,50,000	Cash in hand	25,000
Sundry Creditors	75,000	Cash at bank	55,000
Bills Payable	50,000	Sundry Debtors	85,000
Outstanding expenses	5,000	Bills Receivable	1,05,000
		Stock	1,00,000
		Prepaid expenses	10,000
Total	9,80,000	Total	9,80,000

From the information given above, calculate :

i) Current Ratio ; ii) Acid Test Ratio ; iii) Absolute Liquid Ratio ; and iv) Comment on the short term financial position.

b) Explain under capitalization and over capitalization.

3. a) State and appraise the objectives of Financial Management.

b) Explain different types of Mutual Fund Schemes.

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4. Give the Journal Entries and Ledger accounts of Mr. Rajan in respect of the transactions given below : Prepare Purchase a/c, Capital a/c, Sales a/c, Arun a/c and Gomes a/c :

2019	
March 1	Started business with Rs. 50,000
March 3	Purchased goods for Rs. 12,000
March 4	Purchased goods on credit from Gomas Rs. 8,000
March 8	Sold goods to Arun Rs. 6,000
March 12	Paid to Gomas Rs. 5,000
March 15	Received from Arun Rs. 4,000
March 18	Sold goods for Rs. 9,000

5. a) From the following information calculate Contribution per unit and Marginal cost for the selection of suitable Product Mix :

Direct Material :

Product A		Rs. 10 per unit
Product B	...	Rs. 9 per unit

Direct Labour :

Product A	Rs. 3 per unit
Product B	Rs. 2 per unit

Variable Overhead	100% of Direct Labour
Fixed Overhead	Rs. 8,000

Selling Price per unit :

Product A	Rs. 20 per unit
Product B	Rs. 15 per unit

Sales Mixtures :

(i) 1000 units of product A and 2000 units of product B.

(ii) 1500 units of product A and 1500 units of product B.

(iii) 2000 units of product A and 1000 units of product B.

b) Describe the Accounting Conventions.

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6. a) From the following Ledger account balances, prepare a Trial Balance as on 31st March 2019 :

	Rs.
Capital	3,00,000
Drawings	20,000
Insurance	15,000
Sundry debtors	1,20,000
Sundry creditors	2,00,000
Purchases	40,000
Sales	70,000
Discount allowed	5,000
Printing and Stationary	12,000
Rent	36,000
Opening stock	50,000
Furniture	80,000
Salaries	60,000
Interest received	6,000
Bills payable	8,000
Bank loan	32,000
Machinery	1,56,000
Wages	12,000
Purchase returns	1,200
Sales returns	2,300
Carriage on purchase	700
Dividend received	1,800
Freight and duty	4,750
Land and buildings	7,500
General expense	3,250
Discount received	5,500

b) Differentiate Ledger and Journal.

7. a) Explain the nature and scope of Budgetary control.

b) Summarise in detail about the elements of cost.

c) Examine the Cost Volume Profit Analysis.

(5 × 20 = 100 marks)

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D 91107

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION, DECEMBER 2020

M.C.A.

MCA 18 403—COMPUTATIONAL INTELLIGENCE

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*

Each question carries 20 *marks.*

1. Discuss about the strategies for space search.
2. Explain in detail about heuristics in games.
3. Discuss in detail about forward and backward reasoning.
4. Discuss in detail about expert system shells. Also provide details of expert systems tools.
5. Describe about the working of genetic algorithm in detail.
6. Explain in detail about the learning process in neural networks.
7. Explain in detail about iterative deepening.

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FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION DECEMBER 2020

M.C.A.

MCA 18 402—DESIGN AND ANALYSIS OF ALGORITHM

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **five** *full questions.*
Each question carries 20 *marks.*

1. Describe the various asymptotic notations and their definitions used to represent time complexity of an algorithm. Explain how can an algorithm be changed to have a good best-case running time ? Discuss the role of master's theorem in analysing an algorithm.

2. Use Stassen's algorithm to compute the matrix product C from matrices A and B.

$$A = \begin{bmatrix} 7 & 3 \\ 1 & 5 \end{bmatrix} \qquad B = \begin{bmatrix} 2 & 8 \\ 2 & 4 \end{bmatrix}.$$

Analyse and evolve the time complexity of the Strassen's algorithm and compare and contrast with that of the conventional matrix multiplication algorithm.

3. Explain the general approach of Divide and Conquer method of designing an algorithm. Illustrate Binary Search algorithm designed in this mode using the array [2, 5, 6, 8, 9, 12, 14, 18] for searching a number 14. Also determine the time complexity of this algorithm using recurrence formula.

4. (a) Describe a dynamic programming algorithm to find out the Longest Common Subsequence (LCS). Determine the average time and space taken by the algorithm. Analyse this algorithm and suggest modifications to improve its time and storage requirements.

   (b) Compare and contrast the Branch and Bound and Backtracking methods with the help of a sample problem which can be solved using the above two methods.

5. Differentiate between NP hard and NP Complete problems with examples. Prove the theorem : P = {L : L is accepted by a polynomial-time algorithm} where L is any formal language and P is the class of languages that can be accepted in polynomial time. Discuss how Hamiltonian algorithm can be a NP-complete problem.

Turn over

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6. (a) Define the Travelling-Salesman problem in the conventional way and using a formal language. Prove the theorem: "The Travelling-Salesman problem is NP-complete".

   (b) Illustrate the Subset-Sum problem in Greedy approach. Define the formal language representation of the problem. Derive the time complexity for this algorithm.

7. Explain the significance of parallel algorithms. Discuss a parallel-machine-scheduling problem, given a set of machines and jobs. Show that this algorithm is a polynomial-time 2-approximation algorithm.

(5 × 20 = 100 marks)

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D 91105

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (REGULAR) EXAMINATION
DECEMBER 2020

M.C.A.

MCA 18 401—CRYPTOGRAPHY AND NETWORK SECURITY

(2018 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions.*

Each question carries 20 *marks.*

1. Discuss about OSI security architecture in detail.
2. Explain GCD and LCM with examples. What are the applications of GCD and LCM in cryptography and network security ?
3. Explain in detail about RSA algorithm.
4. Explain in detail about Kerberos.
5. Discuss in detail about intruders and malicious softwares.
6. Explain in detail about block cipher design principles.
7. Explain in detail about hash functions and secure hash algorithms.

(5 × 20 = 100 marks)

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D 91104 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2020

M.C.A.

MCA 10 405 (C)—EMBEDDED SYSTEMS

(2010 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *questions.*
All questions carry equal marks.

I. (a) What are the optimizing design metrics of embedded system ? (10 marks)

(b) Explain general purpose processors, single purpose processors and application specific processors. (10 marks)

II. (a) What are the cache writing techniques and cache impact on system performance ? (10 marks)

(b) Explain DRAM integration problem. (10 marks)

III (a) What are the basic hardware protocol concepts in interfacing ? (10 marks)

(b) Explain network oriented arbitration methods. (5 marks)

(c) Write a note on multilevel bus architectures ? (5 marks)

IV. (a) What is analog to digital convertor ? (5 marks)

(b) Explain the development environment needed for the general purpose processors in programmers' view. (10 marks)

(c) What are timers and counters in peripherals ? (5 marks)

V. (a) Describe each tool that has enabled the elevation of software design and hardware design to higher abstraction levels. (10 marks)

(b) Explain register-transfer synthesis and behavioral synthesis. (10 marks)

Turn over

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VI. (a) Draw the state machine for elevator's control unit. Add hierarchy and concurrency to the state machine model and produce HCFSM of elevator control unit.

(10 marks)

(b) What is the different synchronization methods used in concurrent processes ? (10 marks)

VII. (a) Explain informal, functional, non-functional and executable specification of digital camera ?

(10 marks)

(b) What are the error detecting and correcting methods in embedded system ? (10 marks)

[5 × 20 = 100 marks]

CHMK LIBRARY UNIVERSITY OF CALICUT

D 91101

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2020

M.C.A.

MCA 10 404 C—ADVANCED DBMS

(2010 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions*

All questions carry equal marks.

I. (a) What is RDBMS ? Compare the RDBMS with OODBMS. Give one example for each. (10 marks)

(b) Explain ER model as an object data base conceptual design. (10 marks)

II. (a) Explain CORBA architecture in distributed objects. (10 marks)

(b) List and explain various distributed DBMS architectures. (10 marks)

III. (a) Explain timestamp based protocol for concurrency control. (10 marks)

(b) What are the advantages of distributed database system ? Explain. (10 marks)

IV. (a) Write on Horizontal data fragmentation. Compare horizontal fragmentation with derived horizontal fragmentation. (10 marks)

(b) Compare Prolog and Datalog. (10 marks)

V. (a) Explain different classes of middleware in Client server architecture. (10 marks)

(b) With a suitable diagram explain taxonomy of web mining. (10 marks)

VI. (a) Briefly explain the functionalities of data mining. (10 marks)

(b) List and explain similarity searching techniques used in Multimedia data base. (10 marks)

VII. (a) Explain the components of SGA. (10 marks)

(b) Give an overview of Distributed database in Oracle. (10 marks)

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D 91099 **(Pages : 2)** **Name**.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2020

M.C.A.

MCA 10 404 A—ARTIFICIAL INTELLIGENCE

(2010 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions*
All questions carry equal marks.

1. A) What are the conditions for optimality of a Heuristic function ? Explain AO* algorithm technique for problem solving.

(10 marks)

B) Briefly explain and differentiate between Forward reasoning and Backward reasoning techniques in problem solving.

(10 marks)

2. A) To improve the efficiency of minimax strategy what can be done ? Explain. (10 marks)

B) What is Constraint Satisfaction Problem ? Explain the min conflict algorithm for solving CSP.

(10 marks)

3. A) Explain the syntax and semantics of Propositional logic. Explain the inference rules used in propositional logic.

(10 marks)

B) What is Logical equivalence ? Explain all the logical equivalence used in propositional logic.

(10 marks)

4. A) Explain how frame networks are used in knowledge representation with example.

(10 marks)

B) What is resolution in predicate logic ? Explain with example. State and explain completeness of resolution in predicate logic.

(10 marks)

5. A) Explain the different types of probabilistic inferences used in Bayesian networks. (8 marks)

B) Explain Multilayer feed forward networks with example. (12 marks)

Turn over

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6. A) Suppose a genetic algorithm uses chromosomes of the form x = abcdefgh with a fixed length of eight genes. Each gene can be any digit between 0 and 9. Let the fitness of individual x be calculated as : $f(x) = (a + b) - (c + d) + (e + f) - (g + h)$, and let the initial population consist of four individuals with the following chromosomes :

x1 = 6 5 4 1 3 5 3 2

x2 = 8 7 1 2 6 6 0 1

x3 = 2 3 9 2 1 2 8 5

x4 = 4 1 8 5 2 0 9 4

a) Evaluate the fitness of each individual, showing all your workings, and arrange them in order with the fittest first and the least fit last.

b) Perform the following crossover operations:

i) Cross the fittest two individuals using one-point crossover at the middle point

ii) Cross the second and third fittest individuals using a two-point crossover (points b and f).

iii) Cross the first and third fittest individuals (ranked 1st and 3rd) using a uniform crossover.

c) Suppose the new population consists of the six offspring individuals received by the crossover operations in the above question. Evaluate the fitness of the new population, showing all your workings. Has the overall fitness improved ?

d) By looking at the fitness function and considering that genes can only be digits between 0 and 9 find the chromosome representing the optimal solution (i.e. with the maximum fitness). Find the value of the maximum fitness.

(12 marks)

B) What do you mean by Rule based expert system? What are the advantages and disadvantages of Expert system ?

(8 marks)

7 A) Write a short note on LISP. (10 marks)

B) Describe LISP Macros with example. What are the uses of Macros ? (10 marks)

[5 × 20 = 100 marks]

CHMK LIBRARY UNIVERSITY OF CALICUT

D 91098

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2020

M.C.A.

MCA 10 403—WEB PROGRAMMING

(2010 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions.*

All questions carry equal marks.

1. (a) Write a HTML program for creating a contact form.

   (b) What is the use of FrontPage ? Explain.

2. (a) What is CSS ? Explain about in-line style with an example.

   (b) What is CSS ? Explain with an example how external style sheets can be linked ?

3. (a) Explain with examples recursion in Javascript.

   (b) Explain in detail about Data Binding with Tabular Data Control.

4. (a) Explain in detail about XML DTD.

   (b) Explain Multitier application architecture

5. (a) Explain in detail about PHP.

   (b) Explain JSP architecture.

6. (a) Explain in detail about DBI.

   (b) With examples explain break and continue statements used in Javascript.

7. (a) Write a program in Javascript to find the factorial of a number using the concept of recursion.

   (b) Write a Javascript example to search a value in an array using the Array Method 'indexOf'.

(5 × 20 = 100 marks)

CHMK LIBRARY UNIVERSITY OF CALICUT

D 91097

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2020

M.C.A.

MCA 10 402—SOFTWARE ARCHITECTURE AND PROJECT MANAGEMENT

(2010 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions*
All questions carry equal marks.

1. a) What are organizational factors ? Explain in detail

   b) Explain in detail the design activities for the conceptual architecture view.

   (10 + 10 = 20 marks)

2. a) How is software interfaces documented ? Explain.

   b) Describe Rule Archetype Pattern.

   (10 + 10 = 20 marks)

3. a) Explain in detail about Service Extension Patterns.

   b) Explain in detail about Structural Patterns.

   (10 + 10 = 20 marks)

4. a) Discuss in detail about patterns for resource management.

   b) Explain in detail about Method- Level EAI. What are the advantages and disadvantages ?

   (10 + 10 = 20 marks)

5. a) Write notes on Java Middleware and EAI.

   b) Explain in detail about Object-Relational Structural Patterns.

   (10 + 10 = 20 marks)

6. a) What is Object-Relational Metadata Mapping Patterns ? Explain in detail about Metadata mapping.

   b) What is Domain Logic patterns ? Explain in detail about service Layer.

   (10 + 10 = 20 marks)

7. a) What is Data source Architectural patterns ? Explain in detail about Active Record.

   b) Explain in detail about Concurrency.

   (10 + 10 = 20 marks)

[5 × 20 = 100 marks]

CHMK LIBRARY UNIVERSITY OF CALICUT

D 91096

Name.....

Reg. No.....

FOURTH SEMESTER M.C.A. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2020

M.C.A.

MCA 10 401—CRYPTOGRAPHY AND NETWORK SECURITY

(2010 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer any **five** *full questions.*

All questions carry equal marks.

1. (a) What is GCD and LCM ? Find the GCD (525, 231).

   (b) State and prove Fermat's Theorem.

2. (a) Explain in detail the various security attacks.

   (b) Explain in detail about the various security services and mechanisms.

3. (a) Explain in detail about IDEA.

   (b) Explain in detail about Blowfish.

4. (a) Explain in detail about MD5 hash algorithm.

   (b) Explain in detail the digital signature standard.

5. (a) Explain in the digital signature service provided by PGP.

   (b) Explain in detail about TLS.

6. (a) Explain in detail about the S/MIME certificate processing.

   (b) What is a polyalphabetic cipher ? Explain in detail the various types of polyalphabetic ciphers with examples.

7. (a) Explain complete residue systems with examples.

   (b) Write notes on the fundamental theorem of arithmetic.

[5 × 20 = 100 marks]

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