

FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Electronics

ELE 4C 05—COMMUNICATION ELECTRONICS

(2019 Admission onwards)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer atleast eight questions.**Each question carries 3 marks.**All questions can be attended.**Overall ceiling 24.*

1. How many signals are required to effect modulation ? What are they ?
2. List two advantages of the modulation process compared to no modulation.
3. Define phase modulation.
4. Discuss on the bandwidth of an FM wave.
5. What is de-emphasis ?
6. Define Phase modulation.
7. A message signal made of multiple frequency components has a maximum frequency value of 8 kHz. Find out the minimum sampling frequency required according to sampling theorem.
8. Define quantization error.
9. What is pulse position modulation ?
10. Distinguish between coherent detection and non-coherent detection.
11. How is baud rate related to transmission bandwidth in ASK ?
12. How does differ FM differ from FSK ?

(8 × 3 = 24 marks)

Turn over

Section B

Answer atleast five questions.

Each question carries 5 marks.

All questions can be attended.

Overall ceiling 25.

13. How AM waves are detected ?
14. With the help of diagrams, explain a basic reactance modulator.
15. Find the carrier and modulating frequencies, the modulation index, and the maximum deviation of the FM represented by the voltage equation

$$v(t) = 20 \cos(8\pi \times 10^6 t + 9 \sin(2\pi \times 10^3 t)).$$

16. Explain FDM.
17. Explain Companding.
18. With block diagrams, explain coherent binary FSK generation,
19. Explain demodulation of coherent BPSK.

(5 × 5 = 25 marks)

Section C

Answer any one question.

Each question carries 11 marks.

20. Write a note on Amplitude Modulation.
21. Explain PCM generation and detection.

(1 × 11 = 11 marks)

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2022**

Electronics

ELE 4B 06—ANALOG INTEGRATED CIRCUITS

(2019 Admission onwards)

Time : Two Hours

Maximum : 60 Marks

Section A

*Answer at least **eight** questions.*

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. Draw the block diagram of a typical op-amp.
2. What is Gain-bandwidth product ? Give the GBP of IC 741.
3. Define : (a) CMRR ; and (b) input bias current.
4. Draw the circuit of a differentiator. Give its applications.
5. What are the characteristics of a narrow band pass filter ?
6. Draw the circuit of a square wave generator using 741.
7. What is a peak detector ?
8. What is a zero crossing detector ? Mention its applications.
9. What is the need for sample and hold circuit ?
10. What are the applications of PLL ?
11. Define line and load regulation in voltage regulators.
12. What is the basic principle involved in switching regulators ?

(8 × 3 = 24 marks)

Turn over

Section B

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. What is an ideal op-amp ? Give the typical characteristics of an ideal op-amp.
14. Draw the circuit of a summing amplifier which will add the voltages : $-2V$, $-3V$, $+4V$ and $+5V$.
15. What is a notch filter ? Draw the circuit and explain its applications.
16. Draw and explain the circuit and operation of a triangular wave generator.
17. Explain the circuit and operation of a Schmitt trigger. Explain the applications of Schmitt trigger.
18. Draw the circuit and operation of astable multivibrator using 555 IC.
19. What is VCO ? Explain the internal blocks of 566 IC.

(5 × 5 = 25 marks)

Section C

Answer any one question.

The question carries 11 marks.

20. Explain the different sine wave oscillators than can be built using op-amps.
21. Discuss the various adjustable voltage regulator ICs.

(1 × 11 = 11 marks)

FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Electronics

ELE4C04—MICROPROCESSORS

(2014—2018 Admissions)

Time : Three Hours

Maximum : 64 Marks

Part A*Answer all questions.*

1. An assembler of a microprocessor is used for translation of a program from _____.
2. Write an instruction that can be used to clear the content of accumulator.
3. The addressing mode used in the instruction PUSH B is _____.
4. RST0 – RST7 are the _____ in 8085.
5. The cycle required to fetch and execute an instruction in a 8085 microprocessor is _____.
6. When a subroutine is called, the address of the instruction following the CALL instruction is stored in _____.
7. The register which holds the information about the nature of results of arithmetic and logic operations is called as _____.
8. Which general register or general register pair is incremented / decremented by 2 during PUSH and POP instructions ?
9. The 80386, with its 32-bit address bus, can address up to _____ of physical memory.
10. Both the CISC and RISC architectures have been developed to reduce the _____ gap.

(10 × 1 = 10 marks)

Part B*Answer all questions.*

11. Describe briefly program counter.
12. Discuss the steps involved to fetch a byte in 8085.
13. What is mnemonic ?

Turn over

14. Explain the differences between JMP and CALL instructions.
15. What is the purpose of HOLD and ALE signals in a processor ?
16. What are the instructions associated with the subroutine ?
17. State three features of CISC architecture.

(7 × 2 = 14 marks)

Part C

Answer any five questions.

18. Differentiate between memory mapped I/O and I/O mapped I/O.
19. Draw and explain the flag register of 8085 in brief.
20. Explain the operations carried out when 8085 executes the instructions : (i) MOV A, M ; (ii) XCHG ; (iii) DAA ; and (iv) LDA 6000.
21. Define : (i) Timing diagram ; (ii) Instruction cycle ; (iii) Machine cycle ; and (iv) T state.
22. With neat diagram explain the general architecture of computer.
23. Discuss the significance and importance of call and return instructions in 8085 microprocessor.
24. Define stack and also write down stack related instructions.
25. Write features of Pentium processor.

(5 × 4 = 20 marks)

Part D

Answer any two questions.

26. Draw the pin configuration of 8085 microprocessor and explain the functional usage of each pin in details.
27. Write an assembly language program to find the largest of the three number 06H, 0 AH and 0BH, and store the result in 4200H. Also draw the flow chart.
28. Describe the different types of interrupts used in 8085 microprocessor ?
29. Discuss the important features of 80386 processor. Also outline the improvements made in processor 80486 over 80386.

(5 + 5 = 10 Marks)

[2 × 10 = 20 marks]

**FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
APRIL 2022**

Electronics

ELE 4B 05—MICROPROCESSORS

(2014—2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer all questions.

Each question carries 1 mark.

1. What is the width of the address bus of 8085 microprocessor ?
2. Write an example instruction for implicit addressing mode in 8085.
3. Mention a special purpose register used in 8085 for stack operations.
4. Name the flag that cannot be used by the programmer in an 8085 microprocessor ?
5. Name the highest priority interrupt in 8085 microprocessors.
6. What is the purpose of ALE signal in 8085 microprocessor ?
7. Mention the pin in an 8085 microprocessor which is used to insert wait states.
8. State whether True or False. "8085 microprocessor has instruction pipelining feature".
9. What is the maximum addressable memory space of an 8086 microprocessor ?
10. What happens when an active signal is given to the RESET pin of 8086 ?

(10 × 1= 10 marks)

Part B

Answer any five question.

Each question carries 2 marks.

11. Define STACK in a microprocessor based system.
12. What are vectored interrupts ?
13. What are the different flags in 8085 microprocessor ?
14. Explain the register structure of an 8085 microprocessor.

Turn over

15. Define the terms Machine cycle and T states.
16. What is the physical address from which instruction will be fetched in an 8086 system if [CS] is 34AH and [IP] is 7514H ?
17. Mention any *two* features present in 8086 which are not available in 8085.

(5 × 2 = 10 marks)

Part C

Answer any six questions.

Each question carries 5 marks.

18. Explain the different modes of operation of 8255 PPI.
19. Explain the stack related instructions in an 8085 microprocessor.
20. How is instruction pipelining realised in 8086 ?
21. Explain the timing diagram of a Memory Read Machine cycle of an 8085.
22. What is a subroutine ? Explain the instructions used along with a subroutine.
23. Explain the addressing modes of 8085.
24. Explain the pins in an 8085 microprocessor used for DMA.
25. Explain the different types of rotate instructions available in the 8085 instruction set.

(6 × 5 = 30 marks)

Part D

Answer any two questions.

Each question carries 15 marks.

26. Explain the architecture of 8085 with necessary diagrams.
27. Explain the 8255 PPI with diagram.
28. Explain the architecture of 8237 DMA controller with block diagram.
29. Explain with diagram the interfacing of an ADC with an 8085 microprocessor.

(2 × 15 = 30 marks)