2021

COMPUTER SCIENCE — HONOURS

Fifth Paper

Full Marks : 100

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer question **1** and *any five* taking at least *one* from each **Group**.

1. Answer *any ten* questions : 2×10

   (a) What is the flag register?

   (b) Write down the difference between Hardware and Software interrupt with respect to Microprocessor 8085.

   (c) What is the purpose of READY terminals in Microprocessor 8085?

   (d) What are the differences between OPCODE and OPEPAND?

   (e) What is the maximum number of I/O ports that can be interfaced with microprocessor 8085, when connected in I/O mapped I/O method?

   (f) What is the purpose of SIM instruction? Explain with suitable example.

   (g) Highlight the main differences between Hardwired and Micro programmed Control Unit.

   (h) What is Arithmetic shift? Explain with example.

   (i) Name the different Transmission Impairments.

   (j) What are bit rate and band rate?

   (k) Assume seven computing devices are connected and arranged in Mesh topology. How many cables are needed?

   (l) Highlight main four differences between RISC and CISC computers.

   (m) What are the different line coding schemes used for digital data transmission?

   (n) Identify the five components of a data communication system.

Group - A

(Microprocessor)

2. (a) Draw the internal Architecture of Microprocessor 8085 and explain each section in brief.

   (b) Explain the De-Multiplexing of Address/Data bus of Microprocessor 8085 with a neat labeled diagram.

   (c) Write down the differences between Memory mapped I/O and I/O mapped I/O with respect to Microprocessor 8085. 6+5+5

Please Turn Over

3. (a) Draw the timing diagram for the Instruction of STA 8000, the Opcode of STA 8000 is 32_H and the code is written across E000H, E001H and E002H memory locations which is shown below :

E000H	3AH	
E001H	00H	STA 8000
E002H	80H	

   (b) State briefly on cycle stealing technique.

   (c) What is foldback memory? Explain with example.   5+6+5

4. (a) Write down the different addressing modes of Microprocessor 8085 with suitable example.

   (b) Explain the Stack and subroutine operation of Microprocessor 8085 with the help of neat diagram and suitable example.

   (c) What is the function of Program Counter?   8+5+3

Group - B
(Computer Organization-II)

5. (a) What is DMA? Explain it with suitable block diagram.

   (b) Explain Booth's Algorithm for multiplication with a suitable example.

   (c) Explain with example parallelism in micro-instructions.   6+6+4

6. (a) Explain bus arbitration with appropriate illustration.

   (b) Write short note on computer peripherals.

   (c) What are the different Secondary memory devices used in computing devices? Explain each in brief.   6+5+5

7. Draw a logic circuit of ALU capable of performing 4-bit 2's complement subtraction and addition.

                                                                      8+8

Group - C
(Computer Networks)

8. (a) Explain the function of physical layer and data link layer.

   (b) What are the different modes of Transmission? Explain with suitable example.

   (c) What do you mean by logical and Physical Addressing?   7+5+4

9. (a) What is Frequency Division Multiplexing (FDM)? Explain with suitable example.

   (b) Write down some characteristics of Line coding.

   (c) Write a short note on TCP/IP protocol suit.   6+4+6

10. (a) What are the different characteristics of Network Layer?

(b) What are the different types of guided medium used for data communication? Explain with suitable example.

(c) Encode the following streams of bits using RZ line coding scheme.

   0100011100001110

(d) What is DNS? Why is it important?   4+4+4+4

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