

**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	STA 8000
E001H	00H	
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

( 3 )

**T(III)-Computer Sc.-H-5**

- 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
-