

2018
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 No. 1** and **any five** questions from the rest
taking at least **one** from each **Group**

1. Answer **any ten** questions : 2×10

- (a) What is machine cycle of 8085 ?
- (b) Classify 8085 instructions in various groups.
- (c) What is the burst mode of DMA ?
- (d) How many bits are there in address bus and data bus of 8085 microprocessor ?
- (e) Mention the differences between JZ and JNZ.
- (f) What is the function of the accumulator ?
- (g) What is cache memory ?
- (h) What is associative memory ?
- (i) What is TDM ?
- (j) What is USB ?
- (k) Explain mesh topology.
- (l) What do you mean by half-duplex communication ?
- (m) What is a peer-to-peer process ?
- (n) Can the bit rate be less than the pulse rate ? Explain.
- (o) What is the difference between even parity and odd parity ?

Group – A

2. (a) Discuss the functions of the following signals of 8085
- (i) IO/\overline{M} ;
 - (ii) HOLD;
 - (iii) ALE and
 - (iv) S_0, S_1 .

8

[Turn Over]

(b) Draw the timing diagram for the Instruction of STA 8000H, the opcode of STA is 32H and the code is written across E000H, E001H and E002H memory location which is shown below :

E000H	32H	STA 8000H
E001H	00H	
E002H	80H	

- (c) Explain the function of the status flag 'carry status' (CS). 6
3. (a) Explain what operations are performed by the following instructions 2
- (i) LXI rp, data,
- (ii) DAA and
- (iii) LDAX B. 6
- (b) What are programmed data transfer schemes ? Classify them and state briefly about them. 2+1+7
4. (a) Explain enabling, disabling and masking of interrupts. Discuss with examples, how to transfer data using interrupts. 6+6
- (b) What is Interrupt Service Subroutine (ISS) ? Is ISS same for different I/O devices ? 3+1

Group – B

5. (a) What is the difference between a microprocessor and a microprogram ?
- Is it possible to design a microprocessor without a microprogram ?
- Are all microprogrammed computers also microprocessors ? 4+4+2
- (b) (i) Apply your algorithm to multiply $(-11) \times (-12)$.
- (ii) Perform the addition $(-83) + (+68)$ in binary and interpret the result obtained. Write the necessary algorithm.
- (iii) Perform the subtraction $(-68) - (+83)$ in binary. Write the necessary algorithm. 2+2+2
6. (a) Compare and contrast RISC and CISC architecture. 4
- (b) What is the difference between a direct and an indirect instruction ? 4
- (c) Describe microinstruction and micro-operation. 2+2
- (d) Write short notes on Primary memory. 4

7. (a) A computer uses RAM chips of 1024×1 capacity.
- (i) How many chips are needed, and how should their address lines be connected to provide a memory capacity of 1024 bytes ? 3
- (ii) How many chips are needed to provide a memory capacity of 16 Kbytes ? 3
- (b) Explain direct mapping technique used in cache memory. 6
- (c) Briefly state the advantages of using tri-stated gates in BUS structure. 4

Group – C

8. (a) What are the advantages and disadvantages of parallel transmission ? 5
- (b) Compare the two methods of serial transmission. 5
- (c) What are the three major steps in block coding ? 4
- (d) Why is synchronization a problem in data communication ? 2
9. (a) How does FDM combine multiple signals into one ? 4
- (b) How is CRC superior to the two-dimensional parity check ? 2
- (c) Which layers in the internet model are the network support layer and user support layer ? Explain their functions. 5+5
10. Write short notes on *any four* : 4×4
- (a) Web Browser
- (b) MAC
- (c) TCP/ IP
- (d) HTTP
- (e) Email
- (f) WAN.