WEST BENGAL STATE UNIVERSITY

B.Sc. Honours Part-III Examination, 2020

COMPUTER SCIENCE

PAPER-CMSA-V

Time Allotted: 2 Hours | Full Marks: 50

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

Answer Question No. 1 and any *two* from the rest of the groups.

1. Answer any ***nine*** questions from the following: 2×9 = 18

(a) What is the advantage of multiplexing the address bus with data bus in 8085 microprocessor?

(b) What is the role of Address Latch Enable signal in 8085 microprocessor?

(c) Explain the machine cycles of STA instruction of 8085 microprocessor.

(d) What is Socket address?

(e) Write the function of Data link layer.

(f) Differentiate between circuit switching and packet switching.

(g) What is DHCP?

(h) What are the different factors that can affect the performance of a pipelined system?

(i) What do you mean by locality of reference?

(j) Describe three level memory hierarchy.

(k) Mention one advantage and one disadvantage of **Ring** topology.

(l) Define Machine Cycle.

(m) In peripheral-mapped I/O, can an input port and an output port have the same address? Justify.

(n) What is the difference between Microprocessor and Micro-controller?

(o) What is the relation between bit-rate and baud-rate?

GROUP-A

2. (a) Draw Timing Diagram of CALL instruction of 8085. 4+4+4+(2+2)

   (b) Compare CALL and JMP instructions of 8085 CPU.

   (c) Write an assembly language program in 8085 to multiply two eight bit data and store the result in consecutive memory location.

   (d) What is the difference between instructions SIM and RIM? Write a program to enable all the interrupts in 8085 system.

3. (a) What do you mean by Vector and Non-Vector Interrupt in 8085 MPU? Discuss briefly various vectored and non-vectored interrupts available in 8085 MPU showing their priority, vector locations, input and pins. (3+6)+4+3

   (b) Explain the role and significance of following signals in 8085 microprocessor:

   (i) S1 and S2 (ii) $IO/\overline{M}$

   (c) Write the output of the following code of 8085 CPU if the memory location C040 contains F0:

```
LXI   H, C040
MOV   A, M
CMA
ADI   01
STA   C041
HLT
```

4. (a) Differentiate between memory-mapped I/O and peripheral-mapped I/O. 4+(4+4)+4

   (b) Explain the following instructions: DAA, RRC.

   (c) Differentiate between vectored and non-vectored interrupts in 8085.

5. (a) A computer has **24 bit** logical address and **12 bit** physical memory address. If the page size is **2K**, calculate the number of pages and the number of main memory blocks. 2+2

   (b) Explain the polling method of bus arbitration. 4

   (c) Distinguish between synchronous and asynchronous data transfers. 3+3

   (d) Will the **Memory Read (MR)** machine cycle of 8085 microprocessor qualify as synchronous or asynchronous data transfer? Justify your answer. 2

GROUP-B

(Data Communication)

6. (a) Describe Synchronous TDM and Asynchronous TDM. 4+5+4+3
   (b) Describe Virtual Circuit switching mechanism.
   (c) What are the differences between Manchester and Differential Manchester?
   (d) What do you mean by connection oriented and connection less protocol?

7. (a) Describe subnetting and supernetting. 5+4+5+2
   (b) Compare Limited Broadcasting and Directed Broadcasting.
   (c) You have been allocated a class A network address of 29.0.0.0. You need to create at least 20 networks and each network will support a maximum of 160 hosts. What are the subnet masks work?
   (d) What is baud rate?

8. (a) Describe CSMA/CD and also mention necessary condition that needs to be followed for collision detection. 5+2+(3+3)+3
   (b) What is Hamming distance?
   (c) In a data communication system sender wants to send 7-bit message 1011100 to the receiver. Generate codeword using Hamming code. If 5^{th} bit (from LSB) in the codeword modified during transmission then show that how receiver can detect the error.
   (d) Describe Dynamic routing algorithm.

GROUP-C

(Internet Technology)

9. (a) What is a MODEM and why is it necessary for data communication? 2+3
   (b) What is URL? How does a URL differ from domain name? 2+3
   (c) Explain the functionality of a router. 6

10. Write short notes on any ***four*** of the following: 4×4 = 16
   (a) WWW
   (b) DNS
   (c) E-mail Architecture
   (d) http and browser
   (e) ISDN
   (f) Internet service provider

——×——