RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, MARCH 2021

THIRD YEAR [BATCH 2018-21]

Date : 16/03/2021 **COMPUTER SCIENCE [HONOURS]**

Time : 11.00 am – 2.00 pm **Paper : V [Gr.B]** Full Marks : 60

Unit I

Answer **any one** question from question nos. 1 & 2: [1×5]

1. Why 8085 is called an 8 bit microprocessor? Give examples of 16 bit and 32 bit microprocessors.
2. What is Fetch cycle in timing diagram? Why does number of T states varies for some of the instructions.

Answer **any three** questions from question nos. 3 to 7: [3×10]

3. a) List the four categories of 8085 instructions that manipulate data.
   b) What is the role of Auxiliary Carry (A) flag in 8085? Explain with example.
   c) Write down the machine code for the instruction MOV M,A and explain how it is constructed. [5+2+3]
4. a) Write an assembly language program in 8085 to add print Fibonacci series. Also calculate the estimated time to execute the program if the clock frequency is 3.072 MHz.
   b) What are W and Z registers? [7+3]
5. a) With proper diagram explain how $\overline{\text{MEMR}}$ and $\overline{\text{MEMW}}$ are derived in 8085.
   b) How does 8085 based microcontroller system follow Von Neumann architecture?
   c) Write short note on 'foldback memory' in 8085. [4+3+3]
6. a) If the 8085 adds 86H and 79H, specify the contents of the accumulator and the status of the S, Z and CY flags.
   b) How nesting can be implemented with CALL and RET? Explain with a diagram.
   c) What do you mean by Strobe (STB) and Acknowledge (ACK) in programmable data transfer? [3+4+3]
7. a) What is the difference between RST 7.5 and RST 6.5, RST 5.5?
   b) Compare minimum and maximum mode operations of 8086.
   c) How Stack Segments (SS) register is used with Stack Pointer (SP) and Base Pointer (BP) to generate effective physical address [3+3+4]

Unit II

Answer **any one** question from question nos. 8 & 9: [1×5]

8. Write down the techniques to accomplish Black-Box and White-Box testing. [2.5+2.5]
9. a) Explain the importance of "Defect injection and removal cycle" in the context of software quality assurance.
   b) What are the differences between generic software product development and custom software development? [2.5+2.5]

Answer **any two** questions from question nos. 10 to 13: [2×10]

10. a) Develop a DFD for a "Drug-Store" that will manage inventory, keep track of expiration date, and track allergy records of patients to avoid issuing medicines that might be harmful.

    b) How and when does system feasibility help in SDLC?

    c) Compare and contrast V&V. [5+2+3]

11. a) State and explain the characteristics of SRS which help to specify the requirements completely.

    b) Justify – "Spiral model is a meta model".

    c) What do developers want to know through testing a product? [4+3+3]

12. a) Develop a structure chart of a "Student Registration System".

    b) Justify – "Data Dictionary is a repository of data flows defined in a DFD".

    c) Develop a class diagram to open a bank-account. [4+3+3]

13. a) State and explain different phases of a SDLC.

    b) Develop a State-Transition diagram of an "Online Booking Process" for a tourism development organization.

    c) Define software engineering. [4+4+2]

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