BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)
S.Y.B.Sc.(Computer Science) Sem-III :SUMMER- 2022
SUBJECT : DIGITAL SYSTEMS & MICROPROCESSORS

Day : Tuesday

Date : 12/7/2022

S-20095-2022

Time : 03:00 PM-06:00 PM

Max. Marks : 60

N.B:
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw diagrams **WHEREVER** necessary.
4) Use of **CALCULATOR** and log table is allowed.

Q.1   Attempt **ANY TWO** of the following: (12)
- a) Explain the functions of carry flag, parity flag, auxiliary carry flag, zero flag, overflow flag and interrupt flag.
- b) Explain the concept of associative memory with necessary diagram.
- c) Draw block diagram of 8086 microprocessor and explain execution unit and bus interface unit.

Q.2   Attempt **ANY TWO** of the following: (12)
- a) Draw block diagram of Programmable Peripheral Interface and explain the function of its different blocks.
- b) Explain the working of 2-bit flash ADC with appropriate diagram.
- c) What is stack? Explain how PUSH and POP instructions are implemented in memory stack.

Q.3   Attempt **ANY TWO** of the following: (12)
- a) State the function of DMA controller. Explain DMA transfer using DMA controller with neat diagram.
- b) Explain the following addressing modes with one example of each:
  i) Register   ii) Direct   iii) Immediate
- c) With necessary diagram explain R-2R ladder method for digital to analog converter.

Q.4   Attempt **ANY THREE** of the following: (12)
- a) State and explain any four rotate instructions.
- b) Explain any four parameters of analog to digital converter.
- c) Explain synchronous serial data transfer.
- d) How does the cache memory help to enhance the system performance? Explain.

Q.5   Attempt **ANY FOUR** of the following: (12)
- a) State the difference between the following instructions:
  i)IMUL and MUL   ii) SUB and CMP   iii) JNZ and JZ
- b) Explain the role of address bus, data bus and control bus in a computer organization.
- c) Explain interrupt initiated data transfer.
- d) State and explain any three assembler directives.
- e) Draw well-labelled block diagram of UART.
- f) Explain 3-level memory hierarchy system.

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