

S.Y. B. SC. (Computer Science) SEM –III (CBCS - 2016 COURSE) :

WINTER - 2018

SUBJECT: DIGITAL SYSTEMS & MICROPROCESSORS

Day: Monday
Date: 22/10/2018

W-2018-0916

Time: 11.00 AM TO 02.00 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 Answer any TWO of the following: (12)

- a) Explain successive approximation method of ADC.
- b) Explain the following addressing modes with examples:
i) Direct ii) Register iii) Immediate
- c) Write an assembly language program to find the smallest of two numbers.

Q.2 Answer any TWO of the following: (12)

- a) Explain the functions of carry flag, interrupt flag, overflow flag, zero flag, parity flag and auxiliary flag.
- b) Explain synchronous and asynchronous data transfer.
- c) Draw and explain block diagram of DMA controller.

Q.3 Answer any TWO of the following: (12)

- a) Explain the concept of associative memory.
- b) Explain Von-Neumann and Harvard architectures in brief.
- c) Draw and explain block diagram of 8086 microprocessor.

Q.4 Answer any THREE of the following: (12)

- a) Draw and explain control word format of PPI.
- b) Explain segmentation system of virtual memory.
- c) What is polling? Explain.
- d) A 4-bit DAC using R-2R ladder is designed with $V = 16\text{ V}$ and $0 = 0\text{V}$. Find the contribution of bits 1000, 0010, 0100 and 0001.

Q.5 Answer any FOUR of the following: (12)

- a) Explain any three parameters of DAC.
- b) Explain the following instructions for microprocessors
i) MOV B X, [4000 H] ii) ADD AX, DX iii) POP
- c) Draw block diagram of 4-level memory hierarchy.
- d) State the features of machine language and assembly language.
- e) Explain the concept of cache memory.
- f) Write short note on interrupts of 8086 microprocessor.
- g) "Cache enhances system performance". Comment.

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