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## Code No: F3102 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD MCA I Semester Examinations, August - 2017 COMPUTER ORGANIZATION

## Time: 3hrs

i)

Max.Marks:60

## Answer any five questions All questions carry equal marks

- 1.a) Demonstrate the design of a sequential circuit for a binary counter.
  - b) Construct a 4-bit synchronous binary counter.
- 2.a) Simplify the following Boolean functions using four-variable maps.

$$F(A, B, C, D) = \sum (4, 6, 7, 15)$$

(i) 
$$F(A, B, C, D) = \sum (0, 2, 8, 9, 10, 11, 14, 15)$$

- b) Explain the functionalities and applications of the following:i) Decodersii) Encoders
  - iii) Multiplexers
  - iv) De-multiplexers.
- 3.a) Describe the general form of floating point representation.
  - b) Give the hardware organization of associative memory and demonstrate with an example. [4+8]
- 4.a) How many 128×8 RAM chips and 128×8 ROM chips are needed to provide memory capacity of 4096 bytes of RAM and 4096 bytes of ROM. List the memory-address map and indicate what size decoders are needed.
  - b) Give an overview of page replacement algorithms. [8+4]
- 5.a) Give the pin configuration of 8086 microprocessor.
  - b) Demonstrate the following addressing modes of 8086 microprocessor with examples:
     i) Indexed ii) Based Indexed [8+4]
- 6.a) Explain the following 8086 instructions:
  i) MUL
  ii) IMUL
  iii) DIV
  iv) IDIV
  - b) Write short notes on the software interrupts in 8086. [8+4]
- 7.a) Write an assembly language program that computes the sum of 10 numbers.
  - b) Give an overview of software polling method for identifying highest-priority interrupt.
- [6+6]
  8.a) Demonstrate the mechanism of DMA.
  b) Explain the functionalities of an IOP interface unit.
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