R09

Code No: F3102

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA I Semester Examinations, August - 2017
COMPUTER ORGANIZATION

Time: 3hrs **Max.Marks:60**

Answer any five questions
All questions carry equal marks
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1.a) Demonstrate the design of a sequential circuit for a binary counter.
b) Construct a 4-bit synchronous binary counter. [6+6]

2.a) Simplify the following Boolean functions using four-variable maps.
i) $F(A,B,C,D) = \sum(4,6,7,15)$
ii) $F(A,B,C,D) = \sum(0,2,8,9,10,11,14,15)$
b) Explain the functionalities and applications of the following:
i) Decoders
ii) Encoders
iii) Multiplexers
iv) De-multiplexers. [6+6]

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. [6+6]

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