BACHELOR OF TECHNOLOGY (CBCS - 2023)

B. Tech. Sem-III Computer Science & Engineering AI & ML : SUMMER : 2025

SUBJECT: COMPUTER ORGANIZATION & MICROPROCESSORS

Day : Thursday
Date : 15/05/2025

S-29208-2025

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Draw neat diagrams **WHEREVER** necessary.
4) Assume suitable data, if necessary.

Q. 1 What are the basic features of 8086 micro processor in terms of Address Bas, Data Size, Memory capacity. **(10)**

OR

Q. 1 Why do we use following components in computer **(10)**
Program counter, Memory Data Register, Control Unit

Q.2 Perform BINARY DIVISION on following decimal number given **(10)**
$(15)_{10} \div (5)_{10}$ and also give its flowchart defining all required variables.

OR

Q. 2 Convert $(10)_{10}$ into its equivalent IEEE-754 format. **(10)**

Q. 3 What do you mean by "CACHE UPDATION"? Explain "WRITE BACK" and "WRITE THROUGH" policy with advantage and drawback. **(10)**

OR

Q. 3 Two – way set associative mapping is used to update CACHE. Assume that main memory is of 1K Bytes and cache is 256 Bytes Find out the following if a block can store 8 bytes. **(10)**

i) Number if bits in TAG field
ii) Number of bits in INDEX field
iii) Number if bits to address all Blocks
iv) How many bits care used to address Lines of a block

Q. 4 Give a block diagram of Input, Output module and explain working of all components. **(10)**

OR

Q. 4 What do you mean by Direct memory Access (DMA)? Give functional diagram of DMA controller and demonstrate its working. **(10)**

Q. 5 Compare Hardwired control unit with micro programmed control unit in terms of it's working and time based response. **(10)**

OR

Q. 5 What do you mean by "MICRO – SEQUENCING" in "MICRO – PROGRAMMED" control unit. **(10)**

Q. 6 What are the advantages of using PIPELINING? Explain following dependencies. Using examples **(10)**
Data dependency Flow dependency

OR

Q. 6 Consider a pipeline system having "S" number of STAGES and "P" is number of instructions to execute. If S = 4 and P = 10 derive a formula to find out time needed vin space time diagram **(10)**

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