Time : 2 Hours   **DIGITAL ELECTRONICS AND COMPUTERS**

Subject Code

V	3	3	1

Total No. of Questions : 5   **(Printed Pages : 3)**   **Maximum Marks : 50**

INSTRUCTIONS :   i) *Answer **each** question on a fresh page.*

ii) *Write the number of question and sub-question clearly.*

iii) ***All** questions are **compulsory**.*

iv) *Figures to the right indicate full marks.*

v) *Draw neat diagrams **wherever** necessary.*

1. A) Fill in the blanks.   **[2]**

    i) The decimal equivalent of $(F)_{16}$ is _____

    ii) When input signals A = 1 and B = 0 is applied to an EX-NOR gate, its output signal will be _____

    B) Answer the following :

    i) With a neat circuit diagram, explain 4-bit ring counter.   **[3]**

    ii) What are bubbled gates ? With the help of logic symbol and truth table, explain bubbled OR gate.   **[3]**

    C) Answer the following :   **[2]**

    What is shift register ? Draw a neat circuit diagram of 4-bit shift right register.

2. A) Define the following :   **[2]**

    i) Full Adder

    ii) Buffer Register.

B) Answer the following :

   i) Draw a neat circuit diagram of JK flip flop and explain its 'Reset' mode. **[3]**

   ii) Explain the terms 'volatile memory' and 'non-volatile memory'. Give one example of each. **[3]**

C) Answer the following :

Draw the block diagram of counter type analog to digital converter. **[2]**

3. A) Fill in the blanks: **[2]**

   i) The 1's complement of binary number $(1010)_2$ is _____

   ii) The 8080A microprocessor consists of _____ number of functional chips.

B) Do as directed : **[3]**

   i) Convert $(4429)_{10}$ to its octal equivalent.

   ii) Convert $(101100010)_2$ to its decimal equivalent

   iii) Convert $(1993)_{10}$ to its hexadecimal equivalent.

C) Answer the following in detail :

Draw a diagram of typical microprocessor and state the functions of Arithmetic Logic Unit (ALU). **[5]**

OR

Draw a block diagram of computer system state any three functions of Central Processing Unit (CPU). **[5]**

4. A) Answer the following in **one** sentence. **[2]**

   i) What is the clock frequency of 8085 microprocessor ?

   ii) Write the formula to obtain total time period of the output waveform of a symmetrical astable multivibrator.

B) Answer the following :

State Demorgan's second theorem. Show that $\overline{A.B} = \overline{A} + \overline{B}$. **[3]**

C) Answer the following in detail :

Explain 'Mouse' as an input device and 'Plotter' as an output device in the computer system. **[5]**

OR

Explain 'Floppy disk' as storage device, state the diameters of mini-floppy and micro-floppy. **[5]**

5. Answer the following :

i) Draw neat logic diagrams converting a NOR gate to AND gate and OR gate. **[2]**

ii) State any two uses of 'Schmitt Trigger'. **[2]**

iii) Differentiate between 'edge triggering' and 'level clocking' with two points of difference in flip-flops. **[2]**

iv) With the help of logic symbol, explain 'multiplexer'. **[2]**

v) State any two advantages of binary ladder. **[2]**

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