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Kharghar, Navi Mumbai - 410 210.

Information Technology Department

Name of Programme: - IF

Name of Course: -Digital Techniques and Microprocessor(SEM-III Winter-2025)

Course Outcome. – Test logic gates and digital systems

Assignment –I

2 Marks Questions.

1. Convert Decimal no 129,181 to binary.
2. Convert Decimal no (5386.345),(453) to Hexadecimal no.
3. Perform the following binary addition
   a)(10101010)+(11001100) b)(1110)+(1100).
4. Perform the following binary subtraction
   a)(1100)-(0101) b)(11000)-(00001).
5. Determine the 1'S complement of the following numbers
   a) (10110) b) (110101) c) (1010).
6. Determine the 2'S complement of the following numbers
   a) (101110) b) (101010) c) (10110)
7. Convert the following decimal number to BCD Number
   a)35 b) 175 c) 2479 d)39
8. convert the following decimal number to excess 3 code number
   a)428 b) 37 c) 247.6
9. Convert the following binary number to gray code number.
   a)11010 b) 110100 c) 10011
10. Convert gray to binary number.
    a)11010 b) 101101 c) 11011

4 Marks Questions.

1. Subtract using 1's complement method
   a) (11011)-(1010) b) (10111)-(11000).
2. Perform the following operation using 2's complement method
   a) (54)-(33).
3. Perform the BCD addition
   a)(2)+(6) b) (9)+(8) c) (57)+(26) .
4. Perform (74)-(33) by using 9th complement method.
5. Prove that the following Boolean expression
   a) A+AB=A B) A+AbarB=A+B.
6. Simplify ABCD +ABbarCD.
7. State and prove any one De-Morgen Theorem,
8. Explain AND gate and OR gate.
9. Draw the logical Circuit Diagram
   Y=AbarBC+ABbar+ACbar.

Last Date Of submission: 04/08/2025

Name of course coordinator: Mrs. Darshana sadafule

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Name of Programme: - IF

Name of Course: -Digital Techniques and Microprocessor(SEM-III Winter-2025)

Course Outcome. – Use basic combinational and sequential logic circuits employing digital ICs.

Assignment - 2

2 Marks Questions.

1. Define minterm and maxterm.

2.Explain the rules to simplify Boolean equation using k-map.

3.define Full Adder with logic diagram.

4.define Half Adder with logic diagram.

5. Define and symbol of Multiplexer.

6.Draw the block diagram of 8:1 MUX.

7.Draw the block diagram of 4:1 MUX.

8 State the types of multiplexer.

4 Marks Questions.

1.Convert boolean expression to canonical SOP expression Y=A$\overline{B}$ +$\overline{B}$C+A$\overline{C}$.

2.Convert boolean expression to canonical POS expression Y=(A+B)($\overline{A}$+C).

3.Y=$\overline{A}\,\overline{B}\,\overline{C}$ +$\overline{A}$BC+A$\overline{BC}$ +A$\overline{B}$C+$\overline{A}$B$\overline{C}$ find the minterm of Sop.

4.Minimize the following function using K-map K=Σ(0, 1, 2, 3, 5).

5.Minimize the following function using K-map K=Σ(4, 12, 6, 14, 8, 10). and draw logic gate circuit diagram.

6.Compare Full Adder and Half Adder.

7. Draw the logical expression by using logic gate Y=$\overline{A}$B+$\overline{A}\,\overline{B}$ +$\overline{A}\,\overline{C}$

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Name of Course: -Digital Techniques and Microprocessor(SEM-III Winter-2025)

Course Outcome. – Perform operations on registers using 8086 instructions.

Assignment - 3

2 Marks Questions.

1. Define combinational circuits and sequential circuit,

2.list four applications of filp flop.

3.Define counter and their type.

4.Application of counter.

5.write the function of BIU.

6.Write the functions of test and reset.

4 Marks Questions.

1.comparison between combinational and sequential circuits,

2.Explain the different triggering methods.

3.what is the synchronous counter.

4.draw 8086 architecture block diagram.

5.list any four feature of 8086 microprocessor.

6.state the function ALE,DT/R,HOLD,M/IO,

7.compare between minimum mode and maximum mode.

8.Explain the concept of pipelining.

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Name of Programme: - IF

Name of Course: -Digital Techniques and Microprocessor(SEM-III Winter-2025) Course Outcome. –Use 8086 microprocessor environment to build and execute assembly language programs.

Assignment - 4

2 Marks Questions.

1) What is algorithm?

2)Define Flowchart?

3)state the function of assembler?

4)what is the Assmbly language programme development tool?

4 Marks Questions.

1) **List any four assembler directives and explain any two of them?**
2) **Explain assembler directive EQU, EVEN.DUP,LABAL?**
3) **Write the instruction format 8086 microprocessor?**
4) **Explain addressing modes of 8086 microprocessor?**
5) **Describe any four logical instruction with example?**
6) **Comparison between JUMP and CALL Instruction in 8086?**

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Name of Programme: - IF

Name of Course: -Digital Techniques and Microprocessor(SEM-III Winter-2025) Course Outcome. Develop assembly language programming in 8086 to implement loops and branching instructions.

Assignment 5

1. Write an assembly language program to add the series of 5 numbers.
2. Write an ALP to find sum of first 10 integer.
3. Write an ALP to multiply two 16 bit binary numbers.
4. Write an ALP to perform word by byte division of signed numbers.
5. Write ALP to perform addition of two BCD numbers.
6. Draw the flowchart and write an ALP to find smallest numbers of given block of data.

Last Date Of submission: 8/10/2025

Name of course coordinator: Mrs. Darshana sadafule