SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

Q.23 Simplify using K-map & realize using Logic Gates. (CO2)

$F(A, B, C, D) = \sum m(0, 2, 4, 5, 6, 7, 8, 12)$

Q.24 What are logic gates? Explain all logic gates with symbol and Truth Table. (CO1)

Q.25 Explain the Architecture of 8051 microcontroller with neat and clean diagram. (CO4)

Roll No. .....

3rd Sem.

Branch : Artificial Intelligence & Machine Learning

Sub.: Digital Electronics & Microcontrollers

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice Questions. All Questions are compulsory. (6x1=6)

Q.1 What are the digits used to represent binary number system? (CO1)

a) 0 b) 0 to 8

c) 0,1 d) 0,1,2

Q.2 The output of AND gate is low _____. (CO1)

a) All the time b) When any input is low

c) When any input is high d) When all inputs are high

Q.3 In 4:1 MUX, How many select lines are required. (CO2)

a) 4 b) 3

c) 2 d) 1

Q.4 A Half adder circuit has _____ inputs. (CO3)

a) 2 b) 3

c) 4 d) 8

Q.5 A flip flop has _____ stable states. (CO3)

a) 1 b) 2

c) 3 d) 4

Q.6 How many timers exist in 8051? (CO4)

a) 1 b) 2

c) 3 d) 4

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Write any two advantages of digital signal over analog signal. (CO1)

Q.8 Draw the symbol of AND Gate. (CO1)

Q.9 1's complement of 11101 is _____. (CO1)

Q.10 A combinational circuit doesn't have _____. (CO3)

Q.11 What is the size of ROM is 8051 microcontroller. (CO4)

Q.12 $A + AB =$ _____. (CO2)

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

Q.13 Solve using 2's complement method. (CO1)

100111

- 10011

Q.14 Convert $(1001011)_2 = (?)_8 = (?)_{16}$. (CO1)

Q.15 Write the operation of PIPO shift register. (CO3)

Q.16 Solve using Boolen algebra. (CO1)

$$Y = A + A\overline{B}C + ABC + AB\overline{C} = A\overline{C}$$

Q.17 Write a short note on Decoder circuit. (CO2)

Q.18 Explain Half Adder with diagram. (CO3)

Q.19 Differentiate between Latch and Flip Flop. (CO2)

Q.20 Explain T Flip Flop.

Q.21 Difference between Microprocessor and Microcontroller. (CO4)

Q.22 Write a short note on SFRs of 8051 microcontroller. (CO4)