5TH SEM. /ELECTRICAL/ 2023(W) NEW

Th- 3 Digital Electronics & Microprocessor

Full Marks: 80 **Time- 3 Hrs**

Answer any Five Questions including Q No.1& 2
Figures in the right-hand margin indicates marks.

1. Answer **All** questions 2 x 10

a. Perform the subtraction: 10100.01- 11011.10 using 2's complement method.

b. State De- Morgan's theorem.

c. Define Min-term and Max-term.

d. What is Modulus of a counter?

e. List the hardware interrupts of 8085 microprocessor in priority order.

f. Give two examples of each 2 byte and 3 byte instructions.

g. Define opcode and operand.

h. Convert (i) $(A0F6.1BE)_{16}$ to Decimal.

(ii) $(253.6)_8$ to Hexadecimal

i.What is the function of ALE and ALU in 8085 microprocessor.

j.Draw the AOI logic circuit of F= [(AB+C')D]'

2. Answer **Any Six** Questions 6 x 5

a. Simplify the given Boolean expression to minimum number of literals and draw the logic circuit of simplified expression.

F= [(ABC+A'B')'+BC]'

b. Design a binary to octal decoder with neat circuit diagram.

c. What is Bus? With neat diagram explain bus structure of 8085 microprocessor.

d. Draw the timing diagram for the MOV B, M instruction of 8085 microprocessor.

e. Simplify the expression by using K-map and realise using universal gates.

$F(P, Q, R, S) = \sum_m (3,5,6,7,8,11,12,13, 14, 15)$

f. Design a 2 bit magnitude comparator circuit by using logic gates.

g Explain different addressing modes of 8085 with example.

3 With proper pin diagram, discuss the function of each pin of 8085 microprocessor. 10

4 Explain different modes of operation of 8255 PPI. 10

5 Briefly explain the types of shift registers with suitable diagram. 10

6 Explain the working of an Asynchronous Decade Counter. 10

7 Write short notes on: 10

(i) Race around condition

(ii) Memory mapping