V-SEM./ Electrical/2021(W)

TH-III DIGITAL ELECTRONICS AND 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. Which codes are known as self-correcting codes and why?

   b. Why de-multiplexers are referred to as data distributors?

   c. Define racing condition.

   d. State De- Morgan's theorem.

   e. Write down the truth table of a 2 input Exclusive-OR gate?

   f. Solve $(1010)_2$-$(1010)_2$ using 1's complement.

   g. What is the function of ALU in 8085 microprocessor?

   h. What do you mean by program counter?

   i. Why interfacing is required in microprocessor?

   j. Define opcode and operand.

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

   a. Explain the working of 4:2 encoder with diagram.

   b. With a neat diagram explain the operation of SISO and PIPO register.

   c. Show the logic diagram of a clocked SR flip flop. Explain its working with a functional table.

   d. Which gates are referred to as universal gates and why? How other gates can be realized using NOR gates?

   e. Define stack, stack top and stack pointer and why it is essential.

   f. Draw the timing diagram of MOV A instruction of 8085 microprocessor with neat sketch.

   g Write an assembly language program for addition of two 8-bit number and sum is 16-bit using 8085 instructions.

3 Design a MOD-10 counter and explain it. 10

4 Draw the functional block diagram of 8085 microprocessor and explain function of each block. 10

5 Simplify and minimize the four variable logic expression using k-map 10
F(A,B,C,D)=ΣM(2,3,4,5) +d(10,11,12,13,14,15)

6 Design a 2 bit comparator circuit whose outputs are P>Q, P<Q and P=Q where P and Q are each 2 bit nos. 10

7 Design a traffic light controller with a neat interfacing diagram with 8085 instruction and explain it. 10