(Please write your Exam Roll No.) *Exam Roll No.* 147.....

END TERM EXAMINATION

THIRD SEMESTER [B.TECH] JANUARY 2024

Paper Code: ECC-207 ***Subject: Digital Logic & Computer Design***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit. Assume missing data, if any.

Q1 Attempt all questions: **(3×5=15)**

a) Reduce the Boolean Expression $+^{-}(+^{-})$

b) What are don't care terms?

c) Differentiate a decoder from a Demultiplexer.

d) Draw the state table and excitation table of T flip flop.

e) Write about Virtual memory.

UNIT-I

Q2 a) What is meant by duality in Boolean algebra? State and prove Associative and Distributive theorems. **(7)**

b) Minimize the expression $(\ ,\ ,\ ,\ ) = \sum(0,1,2,5,8,9,10)$ using K-map and obtain (i) minimal SOP and (ii) minimal POS expression. **(8)**

Q3 a) Explain the operation of a magnitude comparator? **(7)**

b) Implement a full subtractor using 8:1 MUX. **(8)**

UNIT-II

Q4 a) What is Race Around condition? And how is it overcome in JK Flip-Flop? Explain with diagram. **(5)**

b) Design a Mod-5 synchronous counter using JK Flip-Flop. **(10)**

Q5 a) Explain designing of T Flip-Flop using JK Flip-Flop. **(7)**

b) Write short notes on: (i) Shift registers (ii) PLA & PAL **(8)**

UNIT-III

Q6 a) Differentiate between hardwired control and micro programmed control and explain organizations of micro programmed control unit with neat diagram. **(10)**

b) What is addressing mode? Explain different types of addressing modes. **(5)**

Q7 a) What are the different phases of an instruction cycle? Explain with the help of flowchart. **(7)**

b) What is assembly language? Explain basic computer instruction formats with suitable diagram. **(8)**

P.T.O.

UNIT-IV

Q8 a) Define DMA. Explain its need. Explain DMA transfer in detail with the help of suitable diagram. **(7)**

b) What is an interrupt? Explain interrupt cycle with the help of flowchart. **(8)**

Q9 Write short notes on:

a) Modes of data transfer **(5)**

b) Cache memory **(5)**

c) Associative memory **(5)**

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