EVENING

23 JUN 2022

*Please check that this question paper contains __09__ questions and __02__ printed pages within first ten*

[Total No. of Questions: 09] [Total No. of Pages: ..02....]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester:4th
Name of Subject: Digital Electronics
Subject Code: PCEE-105
Paper ID:16186

**Time Allowed: 03 Hours** **Max. Marks: 60**

**NOTE:**

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

**Part – A** **[Marks: 02 each]**

**Q1.**

a) Convert $(B7.9AD)_{16} = (?)_2 = (?)_{10}$
b) Solve the expression using Boolean law $Y = AB\bar{C} + (A + B)(\bar{A} + B)$
c) Write an expression of maximum frequency of operation of n bit Asynchronous and synchronous counters.
d) Give advantages of R2R ladder type DAC over Weighted resistor type DAC.
e) Comparison SRAM and DRAM.
f) Design logic circuit for 3 line to 8 line decoder.

**Part – B** **[Marks: 04 each]**

**Q2.** Formulate AND Gate, OR Gate, NOT Gate and NOR Gate using NAND gates.
**Q3.** Design the circuit for Full Adder with the help of Logic Gates. Give applications
**Q4.** What is multiplexer? Obtain an 8:1 multiplexer using two 4:1 multiplexer.
**Q5.** Draw 3-bit down counters. Explain its working with the help of truth table.
**Q6.** Comment on the parameter which serve to describe the quality of performance of D/A converters.
**Q7.** Explain the construction and operation CCD memory and its advantages.



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**Part – C** **[Marks: 12 each]**

**Q8.** A four variable function is given as F= Σm (0,2,4,8,9,10,14) + d (1,7,13,15).

a) Express in Canonical POS form
b) Express in Canonical SOP form
c) Find the minimized Boolean expression using K maps and realized it using NOR gates only.

or

Describe in detail master slave JK Flip Flop with the help neat waveforms and truth table.

**Q9.** a. What is PAL? Explain.

b. Show how PAL is programmed for the following logic function.

X=AB'C+A'BC'+A'B'+AC

or

Describe the working of successive approximation A/D converter with the help of suitable diagram and compare its performance in terms of speed, accuracy and resolution.

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