

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE) (PT) (Sem.-3)**DIGITAL ELECTRONICS****Subject Code : BTEE-404****Paper ID : [A3241]**

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students has to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students has to attempt any **TWO** questions.

SECTION-A**1. Answer briefly :**

- a. What do you mean by signed and unsigned numbers? Explain.
- b. Convert 1101010 binary number to Gray code.
- c. Differentiate between demultiplexer and a decoder.
- d. Discuss the advantages and disadvantages of QM method and K- Map method.
- e. What is race around condition? Write down the different methods to remove it.
- f. What do you mean by VHDL? List its various characteristics.
- g. Differentiate between combinational and sequential circuits.
- h. What is PLA? List its advantages.
- i. Define Fan-in, Fan-out and unit load with respect to the logic families.
- j. List the limitations of weighted resistor type digital to analog converter.

SECTION-B

2.
 - a. State and prove DeMorgan's theorems.
 - b. Differentiate between Boolean algebra and ordinary algebra
3. Draw and explain the working of R-2R ladder digital to analog converter. Also list its advantages.
4. Draw the logic diagrams and explain the working of Ring counters.
5. Draw the K-map of the following expression and obtain the minimal SOP form. The expression is $AB + \overline{A}\overline{C} + C + AD + \overline{A}\overline{B}C + ABC$
6. What is ROM? Explain its different types. Also discuss the organization of a ROM.

SECTION-C

7. Explain the working of successive approximation and counter type analog to digital converter. Support your answer with suitable diagrams, if required.
8.
 - a. Draw the logic diagram and explain the working of JK flip flop.
 - b. Explain the working of the Mod- 6 counter in detail.
9. Discuss **(any two)** of the following :
 - a. Decision control structure using VHDL
 - b. Programmable logic device
 - c. Comparison of various Logic families