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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (Automation & Robotics) (Sem.-5)

DIGITAL ELECTRONICS

Subject Code : BTAR-504-18

M.Code : 78218

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 have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Answer briefly :**

- 1) What do you mean by signed and unsigned numbers? Explain.
- 2) Convert 1101010 Gray number to binary number.
- 3) Differentiate between combinational and sequential circuits.
- 4) Discuss the advantages and disadvantages of QM method and K-Map method.
- 5) What is race around condition? Discuss.
- 6) Discuss accuracy and resolution w.r.t. A/D converters.
- 7) What is the significance of excitation table? Discuss.
- 8) What is PAL? List its advantages.
- 9) List the advantages of successive approximation A/D converter.
- 10) List the limitations of weighted resistor type digital to analog converter.



SECTION-B

- 11) Convert 11001.1001 binary number to decimal number, hexadecimal and octal.
- 12) Explain the logic diagram and working of SR flip flop in detail. Also discuss its limitations.
- 13) Draw the logical diagrams and explain the working of encoder and multiplexer.
- 14) Discuss the classification and characteristics of memories in detail.
- 15) State and prove DeMorgan's theorems. Also using the law/theorems of Boolean algebra prove that $AB + \bar{A}C + BC = AB + \bar{A}C$.

SECTION-C

- 16) Reduce $F(A, B, C, D) = \sum m(0, 1, 2, 5, 6, 7, 8, 9, 10, 14)$ to the simplest possible form using Quine-McClusky method. Also prove the same with K-Map method.
- 17) Explain the working of parallel and counter type A/D converters. Support your answer with suitable diagrams, if required.
- 18) Explain :
 - a) PLA
 - b) MOD-10 counter

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.