Roll No.
Total No. of Pages : 02
Total No. of Questions: 18

# B.Tech. (Automation \& Robotics) (Sem.-5) <br> DIGITAL ELECTRONICS <br> Subject Code : BTAR-504-18 <br> 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 $A B+\bar{A} C+B C=A B+\bar{A} C$.

## SECTION-C

16) Reduce $\mathrm{F}(\mathrm{A}, \mathrm{B}, \mathrm{C}, \mathrm{D})=\Sigma \mathrm{m}(0,1,2,5,6,7,8,9,10,14)$ 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.

