Roll No. ☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 18

**B.Tech. (Artificial Intelligence & Machine Learning / Artificial
Intelligence (AI) and Data Science / Artificial Intelligence / CSE / Data
Science / IT / CSE (Internet of Things and Cyber Security including
Block Chain Technology) / Computer Engg.)
B.Tech. (CSE) (Artificial Intelligence & Machine Learning) / (CSE) (Cyber
Security) / (CSE) (Data Science) / (CSE) (IOT) (Sem.–3)**

DIGITAL ELECTRONICS
Subject Code : BTES-301-18
M.Code : 76435
Date of Examination : 12-01-23

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS 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

Write briefly :

a) Convert binary number 11010101 into octal and hexadecimal numbers.

b) Explain ASCII codes.

c) Give the applications of Gray codes.

d) State De-Morgan's Theorem.

e) Describe Minterms and Maxterms.

f) Draw half adder circuit diagram.

g) What do you mean by Ripple counters?

h) Draw SIPO, SISO, PISO and PIPO shift registers.

i) Enlist various memories.

j) Classify D/A conversion techniques.

SECTION-B

2. Design all other logic gates using 2 inputs NOR gates.

3. Minimize the function $F = \sum m\ (1,2,3,5,6,8,9)$ using K-Map.

4. Design Full subtracter with truth table, circuit diagrams.

5. Design mod-6 up counter.

6. Draw and explain complex programmable logic devices.

SECTION-C

7. Design BCD to 7 segment decoder.

8. Explain counter type analog to digital converters.

9. Encode Decimal number 56 into binary, octal, hexadecimal, BCD, Gray and Excess 3 codes.