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University of Engineering & Management, Kolkata

1st Term Examination, September, 2022

Programme Name: B.Tech (CSE / CSE (AIML) / CSE (IOT, CYS, BCT))

Semester: 3rd

Course Name: Digital Electronics

Course Code: ESC302

Full Marks: 30   Date: 23rd September, 2022   Time: 9.30 am - 10.30 am

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GROUP – A (10 marks)

Answer the following questions. Each question is of 2 marks. $5 \times 2 = 10$

1. i) Convert binary to gray code: $(111011)_2$.

   ii) Convert decimal $(432)_{10}$ to BCD code.

   iii) Demonstrate the subtraction of 1000100_2 from 1010100_2 using 2's complement method.

   iv) Design full adder using suitable decoder.

   v) Design full subtractor using 4:1 MUXes and any other logic gates if required.

GROUP – B (10 marks)

Answer the following questions. Each question is of 5 marks. $2 \times 5 = 10$

2. a) Using K-map, simplify to obtain minimal expression: $Y = \Sigma m (0,2,3,5,6,7,8,10,11,14,15)$.

   b) Convert $(52410)_{10}$ to Excess-3 code.

   c) Why DEMUX is known as data distributor? $(3+1+1)$

3. Design 4:2 priority encoder with output indicator.

GROUP - C (10 Marks)

Answer the following question. The question is of 10 marks. $1 \times 10 = 10$

4. Derive the characteristic equation and excitation table of JK flip flop.

   Convert JK to T flip flop. $(3+3+4)$

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