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(20221) Roll No.
B.Sc.(Com.Sc.)-III Sem.

NP-3603

B.Sc. (Computer Science)

Examination, Dec. - 2020

Switching Theory and Logic Design

(BCS-302)

Time : Three Hours / [Maximum Marks : 75

Note : Attempt questions from **all** Sections
as per instructions.

Section - A

(Very Short Answer Questions)

Note : Attempt all the **five** questions. Each
question carries 3 marks. Very short
answer is required. $3 \times 5 = 15$

1. Convert the following numbers to hexadecimal:
(i) $(735.5)_8$
(ii) $(1011011)_2$
2. Add 648 and 487 in BCD Code.

P.T.O.

3. What is programmable logic array? How it differs from ROM?
4. What do you mean by Fan-in and Fan-out?
5. What is hazard in Combinational Circuits?

Section - B

(Short Answer Questions)

Note : Attempt any **two** questions out of
the following three questions. Each
question carries $7\frac{1}{2}$ marks. Short
answer is required. $7\frac{1}{2} \times 2 = 15$

6. Simplify the following using tabulation method:
 $f(w, x, y, z) = \sum m(1, 2, 3, 5, 9, 12, 14, 15) + \phi(4, 8, 11)$
7. Design a 4-bit binary comparator with basic gates. Explain its working.

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8. Design a modulo-10 ripple counter using RS flip-flops. Also explain its working.

Section - C

(Detailed Answer Questions)

Note : Attempt any **three** questions out of the following five questions. Each question carries 15 marks. Answer is required in detail. $15 \times 3 = 45$

9. Design a single error detecting and correcting hamming code for decimal numbers represented in excess-3 code.
10. What is the purpose of full-adder? Design a full-adder with two half-adders and basic gates.
11. What is the drawback of JK flip-flop? How is it eliminated in Master Slave flip-flop?

Explain.

12. What is Tri-state logic and explain Tri-state logic inverter with the help of a circuit diagram. Give its truth table.
13. What do you mean by static and dynamic hazards? Explain the path sensitization method in detail with example.