10 - 05 - 2023

De Mazenod College Kandana

Information and Communication Technology

Grade 12 First Term test 10th May 2023

Name.....Class.....No..... Time 2 Hours

Part A

Answer the all questions in paper it self.

1. Draw the electronic diagram of NOT gate

2. Draw the electronic diagram of AND gate

3. Draw the electronic diagram of OR gate

4. Draw the electronic diagram of NAND gate

5. Implement the 2 input XOR gate with basic logic gates and write the out put by using only for S1 and S2 inputs

6. Draw the truth table for the above requirements

7. Draw the 3 input XNOR Logic gate and write the output of it for S1 ,S2 and S3 inputs

8. Draw the truth table for the above requirements

9. Give 3 advantages of using universal gates

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10. Implement NOT gate using only minimum number of NAND gates write all the simplification rules

11. Implement AND gate using only minimum number of NAND gates write all the simplification rules

12. Implement OR gate using only minimum number of NAND gates write all the simplification rules

13. Simplify +65-29 using 1's complements and show all the steps

14.Simplify +65-29 using 2's complements and show all the steps

Simplify the Following Show all the calculations.

15.DAD_{16}-FF_{16}=

16.$E.F2_{16}$-$2.FE_{16}$=

17.$F.EE_{16}$+$F.AA_{16}$=

18.$F.FF_{16}$+0.22_{16}=

19.756_{8}+324_{8}=

20.1101_{8}+1701_{8}=

21.100.00_{8}-0.07_{8}=

22. $10001_2 - 11_2 =$

23. $11.01_2 \times 10.101_2 =$

24. $10000_2 / 110_2 =$

25. $F_{16}/A_{16} =$

26. $F_{16} \times A_{16} =$

Convert the following numbers in to **octal by** using grouping method. Show all the calculations paper itself.

27. $BAD.DAD_{16}$

28. $CAD.DAD_{16}$

29. Draw the data life cycle

30. Write 3 services of Cloud computing

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Part B

Answer all questions on paper itself.

Question 31

The Boolean Function known as the majority function lakes n binary and outputs 1 if a majority (at least half)of inputs are 1, otherwise it outputs 0. Let us consider the case when n=3, which is the 3 input majority function, whose inputs are A,B and C and the output is Q

a. Write the expression for output Q
b. Draw the truth table for above output

Question 32

Suppose a logic circuit needs to be implemented for a digital system that has three inputs A,B and C one output Z. Its behaviour is an follows:

If the input C=1, the output Z has the value of A.

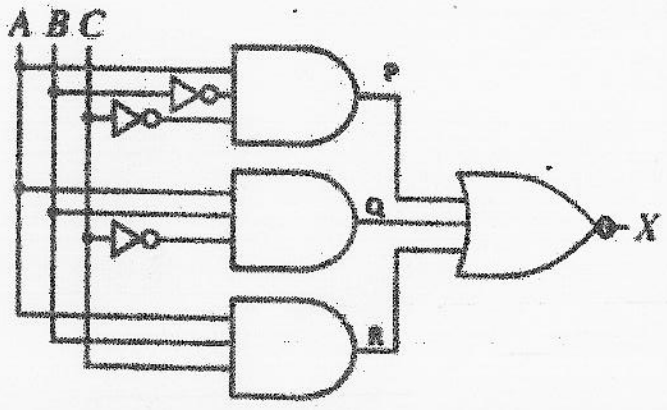
If the input C=0, then output Z has the value of B.

(a) Obtain the truth table for the output Z.

(b) Draw the logic circuit diagram for above requirements

Question 33: Represent **NOR** gate using **only NAND** gates

Question 34: Write the Boolean expression for the P,Q,R and X outputs



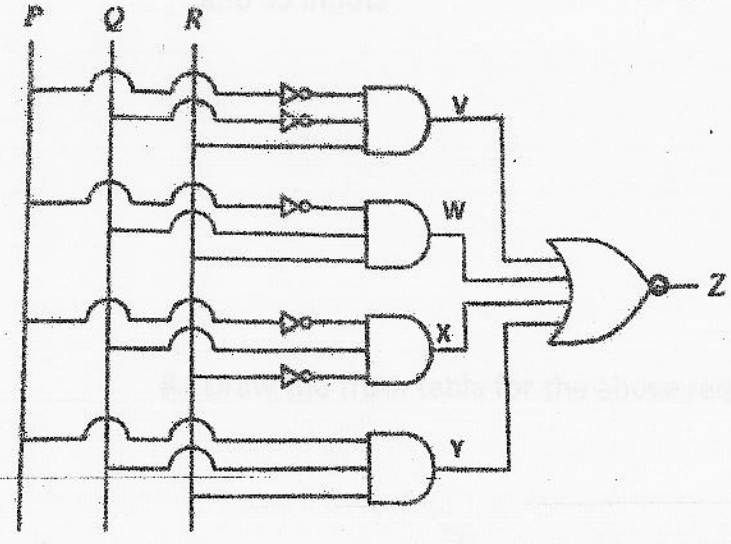
P=.....

Q=.....

R=.....

X=.....

Question 34: Write the Boolean expression for the P,Q,R and X outputs



V=.....

W=.....

X=.....

Y=.....

Z=.....