2022

Physics

[HONOURS]

(CBCS)

(B.Sc. Third Semester End Examinations-2022)

PAPER-CC7P

(PRACTICAL)

Full Marks: 20   *Time: 02 Hrs*

The figures in the right hand margin indicate marks
Candidates are required to give their answers in their own words as
far as practicable
Illustrate the answers wherever necessary

Answer any one from the following Digital system and Application Lab:-

1. Design a NOT gate using transistor and verify the truth table
   a) Theory   5
   b) Showing the result and noting the truth table   6
   c) Result and discussions   4

2. Design and verify AND, OR, NOT gates using NAND gate IC's-
   a) Theory   2+2+2
   b) Noting the truth table and showing the result   2+2+2
   c) Result and discussions   3

3. Convert the following Boolean expression into logic circuit and design it using logic gate IC's $y = \sum m(1,3,5,7)$

a) Theory   6

b) Showing the result and noting the truth table.   7

c) Result and discussions   2

4. Construct OR, AND gate using Discrete components.

   a) Theory   2

   b) Circuit diagram   3+3

   c) Noting the truth table and showing the result.   3

   d) Result and discussions   2+2

5. Design and verify the logic identity.

$$AB + AC + B\overline{C} = AC + B\overline{C}$$

   a) Circuit diagram.   6

   b) Noting truth table and showing the result. 6

   c) Result and discussions   3

6. To design Half adder circuit and to verify respective truth tables.

   a) Theory   2

   b) Circuit diagram   4

   c) Noting the truth table and showing the result.   6

   d) Result and discussions   3

7. To design Full adder circuit and to verify respective truth tables.

   e) Theory   2

   f) Circuit diagram   6

   g) Noting the truth table and showing the result.   4

   h) Discussions   3

8. Design a RS flip flop using NAND gates and demonstrate the excitation table.

   a) Theory   6

   b) Showing the result and noting the truth table.   5

   c) Result and discussions   4

9. Design a JK flip flop using NAND gates and demonstrate the excitation table.

   d) Theory   6

   e) Showing the result and noting the truth table.   7

   f) Result and discussions   2

10. Design and verify the truth table of a 4 bit counter using JK flip-flop (IC 7476)

   a) Theory   3

   b) Circuit diagram   2+2

   c) Showing the result and noting the truth table.   3+3

   d) Result and discussions   2

11. Design a JKMS flip-flop using NAND gates and demonstrate the excitation table.

   a) Theory   6

   b) Showing the result and noting the truth table.   5

   c) Result and discussions   4

12. Design ia Astable multivibrator using IC 555.

   a) Theory   2

   b) Calculation for four different set of frequencies (R_A, R_B, C)   4

   c) Circuit diagram   3

   d) Result   4

   e) Discussions   2

LNB - 02

VIVA - 03