Group-A (Theory)
(Answer any one of the following)

1. Solve the Boolean expression.

   A. C=A+B for the following inputs
      i) A=0, B=0;
      ii)A=1, B=0
      iii) A=1, B=1

   B. An ANDgate is followed by a NOT gate with two inputs A& B, obtain the Boolean expression of the output C.

2. A) Determine the binary equivalents of 576
   B) Perform the following binary addition
      11111+1011+101+10+1

3. Simplify using K Map
   $f(ABCD)=\Sigma\ m(0,2,4,5,8,10,12,13)$

4. A) The noninverting amplifier circuit has R_f=5kΩ and R_1 =2kΩ. What is the voltage gain?
   B) Whta is Monostable Multivibrator?

5. How do the characteristics of a practical OP AMP differ from those of the ideal OP AMP?

6. A) What is p-n junction diode?
   B) When is a p-n junction said to be
    i) forward-biased
   ii) reverse- biased

Group-B (Practical)
(Answer any one of the following)

Write down working formula or theory and truth table (where applicable) of any one of the following experiments:

1. How do you verify and design AND, OR,NOT gates using NAND gates?
2. Descibe IV characteristics of PN diode, Zener and light emitting diode with circuit diagram.
3. Draw the circuit diagram of an inverting amplifier using OP AMP.
   What is voltage gain of the inverting amplifier?
4. Show with a circuit diagram the use of an OP AMP in a noninverting amplifier. Obtain an expression for the voltage gain of this amplifier.
5. Draw the circuit diagram of a differential amplifier using an OP AMP and find an expression for the output voltage.
6. Draw the circuit diagram of an astable multivibrator using 555 timer and explain its principle of action.

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