3. Answer the following questions in 3 or 4 sentences (***Any three***): 2×3 = 6

(a) Difference between AC and DC current.

(b) State Kircchoff's current law.

(c) What are the applications of relay?

(d) What are the importance of earthing?

(e) Write different types of Logic gates.

4. Answer the following essay-type question (***Any three***): 4×3 = 12

(a) Derive Maximum Transfer Theorem.

(b) Convert the decimal number 27 to its equivalent binary number.

(c) What are the safety measures to follow when installing an AC unit?

(d) Define earthing. Explain different types of earthing.

(e) Prepare the symbol, logic equation and truth table for NOT GATE.

★★★

HS/XI/A.Sc.Com/EH/23

2023

ELECTRONICS & HARDWARE

(Theory)

Full Marks : 30

Time : 1 hour

The figures in the margins indicate full marks for the questions

General Instructions:

(i) Write all the answers in the answer script.

(ii) Attempt all parts of a question together at one place.

1. Choose the correct answer: 1×8 = 8

(a) The output of AND GATE is _____

(i) $Y = A + B$

(ii) $Y = A.B$

(iii) $Y = \overline{A}$

(b) _____ touch any live wires or conductor with your bare hands.

(i) Do

(ii) Don't

(iii) Both.

(c) Given $Y = A + B$, Input $A = O$, $B = 1$ output will be_____.

(i) 0

(ii) 1

(iii) 2.

(d) Which of the following is not a type of electrical earthing?

(i) Natural earthing

(ii) Neutral earthing

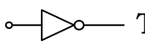
(iii) Equipment earthing.

(e) Ohm's Law, $V = IR$, where R represent

(i) Resistance

(ii) Potential difference

(iii) Current flowing.

(f) A  This symbol represents.

(i) AND Gate

(ii) OR Gate

(iii) NOT Gate.

(g) The resultant resistance in series circuit is

(i) $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

(ii) $R_T = R_1 + R_2 + R_3$

(iii) $R_T = R_1 \times R_2 \times R_3$

(h) *Full form of EMF is*

(i) Electromagnetic force

(ii) Electro-motive force

(iii) Electro-magnetic full.

2. Answer in one word or one sentence each (***Any four***):

$1 \times 4 = 4$

(a) What is electricity?

(b) Define Power.

(c) What is the S.I. unit of magnetic field?

(d) What is semiconductor?

(e) What is electrostatics?

(f) Define Logic Gates.