

22328

23124

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
- a) State the use of following safety accessories –
 - i) Safety hand gloves
 - ii) Safety rubber mats.
 - b) With neat diagram explain “Magnetostriction” effect.
 - c) State any two properties of copper.
 - d) State the purpose of using oil in transformer.
 - e) State any two properties of porcelain.
 - f) Classify different types of wires on the basis of insulation used.
 - g) State the objective of earthing.

P.T.O.

2. Attempt any THREE of the following: 12

- a) With neat diagram explain working of RCCB.
- b) Draw and explain B-H curve.
- c) Give thermal classification of insulating material with their temperature limits and give one example of class Y and A insulation.
- d) Draw the series parallel circuit using one single pole one way switch and one two way switch for following conditions –
 - i) When one way switch is ON and two way switch at upper position (Position No. 1) lamp L_1 will be brightly ON and lamp L_2 will be OFF.
 - ii) When one way switch is ON and two way switch at down position (Position No. 2) lamp L_1 and L_2 will dimly ON (i.e. connected in series).

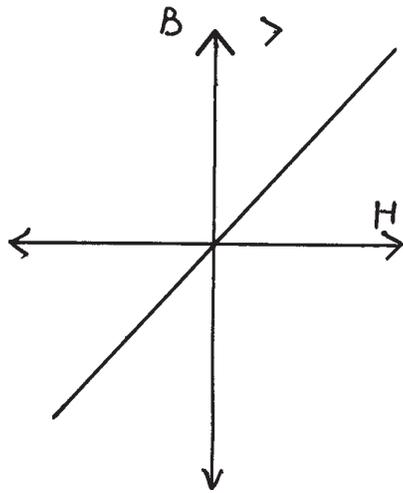
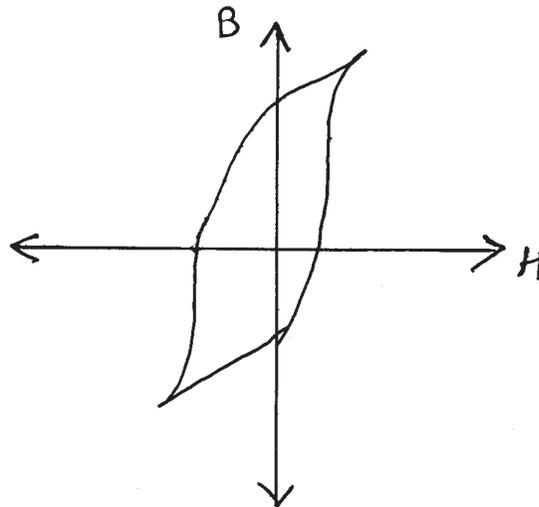
3. Attempt any THREE of the following: 12

- a) Explain any four IE rules of electrical safety.
- b) Suggest the suitable insulating material for following applications,
 - i) Insulation used over 1.5 sq. mm wire
 - ii) Transformer bushing
 - iii) Insulation between 11 kV line and pole
 - iv) Insulation between heating element and base plate of iron.
- c) Draw the circuit for four compartment godown and explain.
- d) Suggest the suitable tools for following :-
 - i) To establish true vertical line
 - ii) Prepare hole using hammer in wall
 - iii) To cut tenon
 - iv) For making lines at right angle.

4. Attempt any THREE of the following:

12

- a) Suggest the suitable safety accessories –
 i) To protect from overload and short circuit conditions
 ii) To protect from leakage current.
 Also write the specifications of above accessories.
- b) Identify the magnetic material from its hysteresis loop shown in Figure No. 1 and Figure No. 2.

Fig. No. 1Fig. No. 2

- c) Explain CRGO and HRGO steel.
- d) Compare PVC conduit wiring with wooden casing capping wiring.
- e) Draw the well labeled sketch of plate type of earthing with all dimensions as per IS and explain.

5. Attempt any TWO of the following:

12

- a) Compare hard and soft magnetic material on the basis of –
 i) Application
 ii) Retaining magnetism
 iii) Susceptibility
 iv) Coercivity
 v) Hysteresis loss
 vi) Magnetic energy stored.
- b) With neat diagram explain breakdown in gaseous dielectric material.
- c) Explain the factors on which earth resistance depends.

6. Attempt any TWO of the following:

12

- a) Observe the following Figure No. 3 and Figure No. 4 carefully and state whether person and bird touching the live wire will receive the electrical shock or not. Justify your answer.

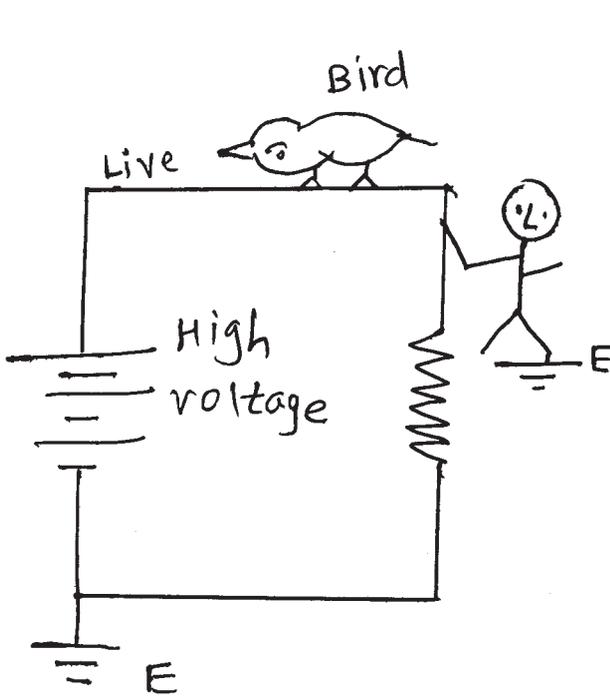


Fig. No. 3

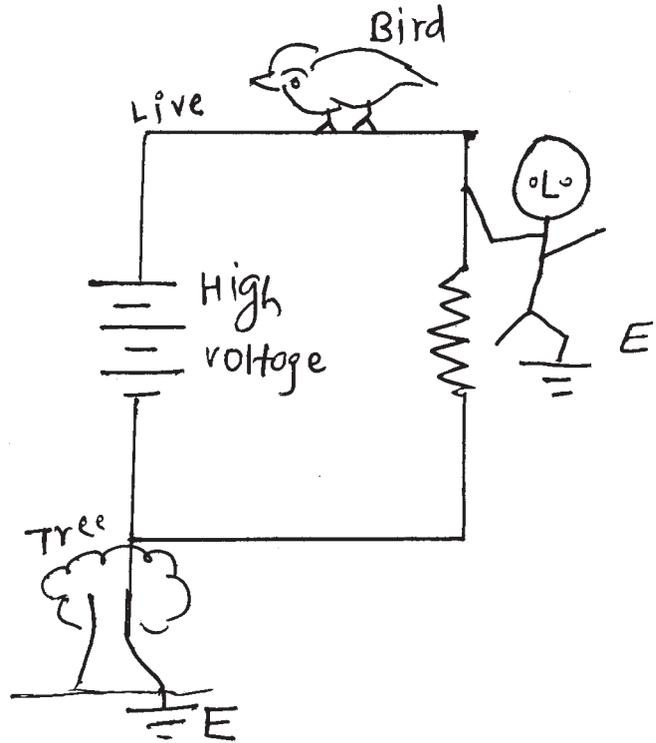


Fig. No. 4

- b) Suggest the suitable insulating material for following application-
- For cooling and insulating purpose of 11 kV/440 V distribution transformer core
 - 33 kV line disc insulator
 - Heating appliances like iron, hot plates
 - Insulation of wire
 - Bedding of cable
 - Holder body.
- c) Write different types of cables and explain any one method of laying cable.