

2022**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 × 4 = 4

- (a) The unit of electrical power is
 - (i) Volt
 - (ii) Watt
 - (iii) Joule
 - (iv) Ampere
- (b) What are the basic building blocks that all matter is composed of
 - (i) Electron, Neutron & Proton
 - (ii) Electron, Proton & ions
 - (iii) Neutron, Proton & ions
 - (iv) Electron, Neutron & charged ions

- (c) Which of the following is a two terminal semi conductor device

- (i) Diode
- (ii) Triode
- (iii) Transistor
- (iv) I.C.

- (d) What is the specification of G.I. earth plate

- (i) 60 cm × 60 cm × 3 mm
- (ii) 60 cm × 60 cm × 6 mm
- (iii) 60 cm × 60 cm × 4 mm
- (iv) 60 cm × 60 cm × 5 mm

2. Fill in the blanks : 1 × 4 = 4

- (a) Device that stores energy in the form of magnetic field are called _____
- (b) Earth or ground wire is made of _____
- (c) A component used to close or break a circuit is _____
- (d) In _____ resistor the current is not directly proportional to the applied voltage.

(3)

3. Answer in 1 word or 1 sentence each (*Any four*): $1 \times 4 = 4$

- (a) What is electric current?
- (b) How are AC and DC current different from each other?
- (c) What will happen to a series circuit if a bulb gets fused? Will the circuit be closed in this case?
- (d) What is the amount of charcoal and salt needed for G.I. pipe earthing?
- (e) A color code of resistor, Brown, Brown, Red and Gold is for which ohmic value?

4. Answer the following questions in 3 or 4 sentences

(*Any three*): $2 \times 3 = 6$

- (a) What are active and passive components?
- (b) What are Extrinsic and Intrinsic semiconductors?
- (c) What is lightning arrester?
- (d) A lamp is plugged into a power socket which provides 110V. An ammeter attached to the lamp shows 2A flowing through the circuit. How much resistance is the lamp providing?
- (e) Write short notes on Transistor and Capacitor.

(4)

5. Answer the following essay-type question (*Any three*):

$4 \times 3 = 12$

- (a) Explain the steps of generation of electricity by thermal power plant with basic block diagram.
- (b) State Kirchoff's voltage law. Calculate the energy use of a ceiling fan, if a ceiling fan of 200 watt is used for four hours/day. For 120 days a year, what will be the annual energy consumption?
- (c) What is earthing? Why earthing is required? Draw pipe earthing.
- (d) What are the general guidelines that a wireman need to follow at the workplace?

★★★