

# 17424

**11920**

**3 Hours / 100 Marks**

Seat No.

--	--	--	--	--	--	--	--

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

**Marks**

**SECTION I**

**1. Attempt any NINE of the following:**

**18**

- a) State Ohm's law.
- b) Draw a circuit diagram of D.C. shunt motor.
- c) Give any two applications of three phase induction motor.
- d) State working principle of transformer.
- e) Enlist the different types of wires used in electrical wiring.
- f) State the function of fuse. Name the material used for fuse wire.
- g) State any two application of D.C. series motor.
- h) Draw Speed Vs Torque characteristic for D.C. series motor.
- i) "An induction motor cannot run at synchronous speed".  
Give justification.
- j) What is autotransformer? And state any two advantages of it.
- k) Define :
  - (i) Voltage ratio
  - (ii) Current ratio
- l) Enlist any two safety precautions to be taken while handling an electrical equipment.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Compare A.C. supply with D.C. supply (Any four points).
  - b) Explain the working principle and construction features of D.C. motor.
  - c) State and explain working principle of 3-phase induction motor.
  - d) Compare core type with shell type transformer.
  - e) Draw wiring diagram of godown wiring and describe the working.
  - f) Describe the operation of incandescent lamp with neat diagram.
- 3. Attempt any FOUR of the following:** **16**
- a) A coil connected in parallel across 100V D.C. supply takes a current of 2A.  
Find :
    - (i) Resistance of the coil
    - (ii) Power dissipated in the coil
    - (iii) Total energy consumed in 24 hours.
  - b) Explain any two methods of speed control of D.C. series motor with neat diagram.
  - c) With neat construction, explain working of C-split type of induction motor.
  - d) A 5KVA, 220/110v, 50Hz, single phase transformer has 55 turns on the secondary. Determine the number of turns in the primary, the secondary and primary full load current.
  - e) State need of earthing. Enlist the different types of earthing.
  - f) Define power factor. Give it's importance.

**SECTION II**

- 4. Attempt any NINE of the following: 18**
- Draw the symbol of zener diode and light emitting diode.
  - Draw the symbols of PNP and NPN transistor, with labelled three terminals.
  - State the need of voltage regulators.
  - Draw the logic symbol of AND gate and OR gate.
  - Enlist the applications of transistor.
  - Draw the symbol of inductor and capacitor.
  - Enlist the applications of zener diode.
  - Define intrinsic and extrinsic semiconductor.
  - State any two applications of SCR.
  - Define Rectifier. Draw the i/p and o/p waveforms of a half wave rectifier.
  - Draw circuit diagram of LC filter.
  - Define breakdown in diodes? State its types.
- 5. Attempt any FOUR of the following: 16**
- Explain P-N junction diode with the help of diagram.
  - Draw a neat circuit diagram of stage CE amplifier and state function of each component.
  - Describe the working of  $\pi$  types filter with a neat sketch.
  - Explain how NAND gate can be used as universal gate?
  - Explain types of LCD display with neat sketches.
  - Describe the working of SCR in detail.

**6. Attempt any FOUR of the following:****16**

- a) Describe the working of TRIAC with the help of a neat sketch.
  - b) Draw and explain working of a NPN transistor.
  - c) Describe the working of LED with the help of a neat sketch.
  - d) State De-morgan's first theorem and prove it with the help of truth table.
  - e) Draw block diagram of power supply and state function of each block.
  - f) Compare half wave and full wave centre tapped type rectifier.  
(Any four points).
-