

17424

11819

3 Hours / 100 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 answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) 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) Define the term
 - (i) Amplitude
 - (ii) Frequency
 - b) State principle of Electromagnetic induction.
 - c) State ohm's law
 - d) Give any two chemical plant application of DC shunt motor.
 - e) Give classification of DC motor.
 - f) A 6 pole three phase induction motor operates on 50 Hz frequency. Calculate its synchronous speed.

P.T.O.

- g) Why single phase induction motor are not self starting?
- h) What is ideal transformer? How it differs from practical transformer.
- i) Give classification of transformer.
- j) A single phase transformer has voltage ratio 230V/115V. It has 100 turns on primary. Find secondary turns.
- k) State types of wires.
- l) Name any two material used for fuse.

2. Attempt any FOUR of the following: 16

- a) Compare single phase and three phase AC supply.
- b) State different methods of controlling speed of
 - (i) DC Series Motor.
 - (ii) DC Shunt Motor.
- c) Draw 'C' split type induction motor describe its working.
- d) State function of "No Volt Coil" and "Overload Coil". in case of DC shunt motor starter.
- e) Describe working principle of autotransformer with neat diagram.
- f) Suggest various safety precautions which should be taken while working with electricity.

3. Attempt any FOUR of the following: 16

- a) List different part of DC machine. State function of any two parts.
- b) Draw and describe core type and shell type transformer.
- c) State need of earthing. List different types of earthing.
- d) Compare squirrel cage and slip ring type 3 phase induction motor.
- e) Describe operation of incandescent lamp with neat diagram.
- f) A coil connected in parallel across 150V dc supply, takes current of 3A. Find
 - (i) Resistance of coil
 - (ii) Power dissipated in coil
 - (iii) Total energy consumed in 2 Hrs

SECTION - II

- 4. Attempt any NINE of the following:** **18**
- a) Give example of
 - (i) Trivalent impurity
 - (ii) Pentavalent impurity
 - b) Give classification of semiconductor
 - c) List application of transistor.
 - d) Draw Symbol of
 - (i) SCR
 - (ii) TRIAC
 - e) Draw circuit diagram of CLC filter
 - f) List application of SCR.
 - g) Give need of Regulated power supply.
 - h) Draw symbol of
 - (i) NPN
 - (ii) PNP transistor
 - i) List Different types of filter.
 - j) What is negative and positive logic.
 - k) Why NAND and NOR gates are called as universal gates.
 - l) Draw symbol of
 - (i) NOT gate
 - (ii) Ex-OR gate
- 5. Attempt any FOUR of the following:** **16**
- a) Draw and describe Bridge Rectifier with neat diagram.
 - b) Compare 'P' type semiconductor and 'N' type semiconductor.
 - c) Draw V-I characteristics of
 - (i) P-N Junction Diode
 - (ii) Zener Diode

- d) Describe working of NPN transistor with neat diagram.
- e) Define Filter. Give its need and classification.
- f) Describe De-morgan's theorem.

6. Attempt any FOUR of the following:

16

- a) Draw construction of
 - (i) SCR
 - (ii) TRIAC
 - b) Describe working principle of light emitting diode (LED)
 - c) Compare Half wave Rectifier and Full wave Rectifier.
 - d) Describe working of diode in forward biased mode with neat diagram.
 - e) Draw V-I characteristic of transistor in CE mode. Show different region.
 - f) Draw symbol and Truthtable of
 - (i) AND gate
 - (ii) OR gate
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