

17987

16117

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **20**
- State the function and types of enclosures provided to machines.
 - Draw and state working of horizontal core type Induction furnace.
 - Give four methods of temperature control of heating elements.
 - List any six characteristics of traction motors.
 - Draw and label and state the meaning of each term in speed-time curve of traction system.
 - List the objectives and types of tariff.
 - What are causes of low power factor.

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

- a) State the principle and application of eddy current heating.
- b) Sketch seam welding and write any two applications of it.
- c) Compare fluorescent tube and incandescent lamp, on any four points.
- d) Define specific energy consumption. State factors affecting specific energy consumption.
- e) Define actual speed and schedule speed of train. State factors affecting schedule speed of train.
- f) Describe in detail concept of power triangle.

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

- a) Draw neat diagram rheostatic braking and plugging method applied to dc series motor.
- b) What is electric drive. Compare between Electric drive and Mechanical drive on any four points.
- c) Compare coreless and Ajax Watt furnace on any four points.
- d) Compare between spot welding and arc welding (any four points)
- e) Explain with diagram construction and working of sodium vapour lamp.
- f) State factors to be considered for selection of shape and size of car of elevator.

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

- a) State the factors governing selection of motors.
- b) Give classification of electric heating.
- c) Draw figure of coreless furnace. State its four advantages.
- d) State advantages of coated electrodes in case of arc welding.
- e) Define:
 - (i) lumen
 - (ii) lux
 - (iii) MSCP
 - (iv) Solid angle
- f) A train has scheduled speed of 30 kmph over a level track distance between station being 1 km. Station stopping time is 20 sec. Assuming braking retardation of 3 kmphs and maximum speed of 25 percent greater than average speed. Calculate acceleration required to run the services.

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

- a) Derive conditions for most economical power factor.
- b) A consumer draws 5000 kw power steadily at 0.7 pf lag for 3650 hours per annum. The tariff is ₹ 1300 per KVA of MD per annum plus ₹ 1.0 per kwh. Calculate energy bill.
- c) What is meant by chopper control of traction motor with schematic diagram.
- d) How are projectors classified according to beam spread?
- e) State eight applications of dielectric heating.
- f) State high lights of Bombay lift act.

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

- a) A electric motor has load variation as given below.
- (i) Torque 300 NM for 15 min.
 - (ii) Torque 100 NM for 10 min.
 - (iii) Torque 250 NM for 5 min.
 - (iv) Torque 200 NM for 10 min.

If speed of motor is 720 rpm. Find power rating of motor.

- b) Differentiate between DC welding and AC welding on any four points.
- c) Explain following:
- (i) Specular reflection
 - (ii) Deffuse reflection
- d) What do you understand by coeffecient of adhesion state the factors affecting it.
- e) Differentiate 2 part and 3 part tariff on any four points.
- f) State four advantages of high power factor.
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