

22525

22232

3 Hours / 70 Marks

Seat No.

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- 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) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (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) List any two designated consumers as per Energy Conservation Act.
- (b) Write any four energy conservation techniques in transformer.
- (c) What is technical loss in electrical installation system ?
- (d) What is the need of energy conservation in lighting system ?
- (e) Define : (i) Co-generation (ii) Tariff
- (f) Define Energy Audit as per Energy Conservation Act.
- (g) List any four energy conservation equipments.



**2. Attempt any THREE of the following :****3 × 4 = 12**

- (a) Why star labelling of equipment is required ? Also state its benefits.
- (b) State any four methods for energy conservation techniques in induction motor.
- (c) Draw block diagram / SLD for APFC & write its working principle.
- (d) Differentiate between topping cycle and bottoming cycle.

**3. Attempt any THREE of the following :****3 × 4 = 12**

- (a) State any four advantages of energy audit.
- (b) State and explain how to achieve energy conservation in lighting system by  
(1) using energy efficient Luminaries (2) using light controlled gears.
- (c) What are different types of tariff structures ? State how TOD & ABT is applied to consumers.
- (d) Write the roles of following agencies :
  - (1) B.E.E.
  - (2) M.E.D.A.

**4. Attempt any THREE of the following :****3 × 4 = 12**

- (a) Differentiate between primary and secondary energy sources.
- (b) Why periodical maintenance is necessary in transformer ? How does it result in energy conservation ?
- (c) What is soft starter ? State its need and benefits.
- (d) Classify co-generation system. Draw the diagram for bottoming cycle.
- (e) What is payback period ? Calculate the payback period if investment is ₹ 2,00,000 & saving is ₹ 50,000 per month.

**5. Attempt any TWO of the following :****2 × 6 = 12**

- (a) Compare conventional Induction motor with Energy efficient motor on following points :
- (1) Efficiency
  - (2) Cost
  - (3) Vibrations
  - (4) Heat dissipation
  - (5) Losses
  - (6) Energy conservation
- (b) List any three energy conservation equipments in transmission and distribution system. Describe the role of any one equipment in transmission and distribution from energy conservation point of view.
- (c) What is Sankey diagram ? State its two significance & draw Sankey diagram for induction motor.

**6. Attempt any TWO of the following :****2 × 6 = 12**

- (a) State the difference between 'Walk through Audit' & Detailed audit. Write stepwise procedure for detailed audit.
- (b) List different commercial losses in transmission and distribution system. State its causes and remedies.
- (c) A consumer has maximum demand of 700 KW at 70% Load factor. If tariff is ₹ 100/KW of maximum demand plus 20 paise per KWh. Find :
- (1) Unit consumed per year
  - (2) Annual charges
  - (3) Overall cost/KWh
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