22232

3 Hours / 70 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) 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