22525

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

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

1. Attempt any FIVE of the following : **10**

(a) Define energy conservation.

(b) Specify any two types of energy efficient transformer.

(c) State any four causes of commercial losses in transmission and distribution system.

(d) Define co-generation with example.

(e) List different types of tariff.

(f) Define energy audit.

(g) Define payback period.

2. Attempt any THREE of the following : **12**

(a) List out main features of Energy Conservation Act, 2001.

(b) State the various energy conservation techniques in transformer. Explain isolating techniques of transformer.

(c) Illustrate with neat sketch the working of Automatic power factor controller.

(d) Explain the operation of back pressure steam turbine co-generation with block diagram.

3. Attempt any THREE of the following : **12**

(a) State the benefits of Variable Frequency Drive (VFD).

(b) Explain energy conservation technique adopted for lighting system using energy efficient luminaries.

(c) Explain incentive and penalty related to power factor tariff.

(d) Explain ABC analysis related to energy audit.

4. Attempt any THREE of the following : **12**

(a) Explain the following energy conservation technique suitable for induction motor :

(i) Operating in star mode

(ii) Rewinding of motor

(b) Describe the technical losses that takes place in Transmission and Distribution system.

(c) Describe availability-based tariff.

(d) Explain energy conservation techniques in fan.

(e) State any four advantages of energy audit.

5. Attempt any TWO of the following : **12**

(a) Differentiate star labelled electrical equipment from non-star labelled electrical equipment on following points :

(i) Quality of material used

(ii) Cost

(iii) Efficiency

(iv) Current Consumption

(v) Power Factor (PF)

(vi) Maintenance required

(b) Explain stepwise procedure for lighting system assessment.

(c) State any six major energy audit instruments and explain their use.

6. Attempt any TWO of the following : **12**

(a) Compare conventional induction motor with energy efficient motor on following points :

(i) Power Factor (PF)

(ii) Energy Conservation

(iii) Losses

(iv) Heat Dissipation

(v) Cost

(vi) Vibration

(b) Describe the factors to be considered for selection of co-generation system.

(c) Explain with flow chart the detailed energy audit procedure.
