22525

23242

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) List the energy conservation techniques in induction motor.

(c) List out various energy conservation equipments.

(d) State the advantages of adoption of cogeneration system in an industry.

(e) Define Energy Audit.

(f) List any two advantages of MEDA.

(g) Define peak off day tariff.

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

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

(b) Explain the Energy Conservation technique of induction motor by improving power quality.

(c) Explain the following energy conservation techniques :

(i) Controlling I^2R losses

(ii) Balancing phase current

(d) State different types of tariff & explain any one.

3. Attempt any THREE of the following : 12

(a) Describe the following energy conservation techniques used to improve performance of transformer :

(i) Parallel operation

(ii) Isolating technique

(b) Explain different methods of energy conservation lighting system.

(c) What is Sankey diagram ? State its significance from energy audit point of view.

(d) State the need and benefits of star labelling.

4. Attempt any THREE of the following : 12

(a) Explain the working principle of automatic power factor controller.

(b) Explain any two energy conservation techniques in fan.

(c) Define the following terms :

(i) connected load (ii) maximum demand

(iii) average load (iv) load factor

(d) Explain the "Mitigation of Power theft" and "Faulty meter replacement" for energy conservation techniques to reduce commercial losses.

(e) Define simple payback period and explain the procedure to calculate payback period. Also state it's significance.

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

(a) (i) State the significant features of energy efficient motors.

(ii) Describe variable frequency drive with suitable diagram.

(b) For the tariff of ₹ 125/KVA of maximum demand and ₹ 1 Per unit consumed, load factor 50%. Find overall cost at (i) unity pf. (ii) 0.8 pf.

Consider maximum demand = 1 KVA.

(c) Explain stepwise the "Detailed Energy Audit Procedure" to be carried out for an organization.

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

(a) List different commercial losses in transmission and distribution system. State its causes and remedies.

(b) Explain with diagram :

(i) Topping cycle type of cogeneration.

(ii) Bottoming type of cogeneration

(c) State the difference between "walk through audit" and "detailed audit". Write stepwise procedure for detailed audit.
