

Total No. of Questions : 8]

SEAT No. :

PA-1468

[Total No. of Pages : 2

[5926]-85

T.E. (Electrical)

ENERGY MANAGEMENT

(2019 Pattern) (Semester - II) (Elective - II) (303151 D)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 5) Assume suitable data, if necessary.

Q1) a) Explain benefits and shortcomings of demand side management for consumer, utility and society. [9]

b) Discuss the implementation demand side management for residential and municipal loads. [9]

OR

Q2) a) Explain Time of day (TOD) and apparent energy tariff. Also discuss their role in energy management. [10]

b) i) Explain role of Biomass in energy conservation.

ii) Solar thermal applications for energy management. [8]

Q3) a) Why energy audit is important? Explain steps in detailed energy audit. [9]

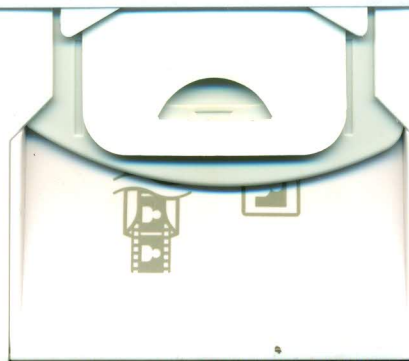
b) Explain in detailed cumulative sum of difference method. How energy saving can realised from this method? [8]

OR

Q4) a) Discuss use of various instruments for energy audit. [9]

b) Discuss importance of data analytics. Also discuss data quality processing of energy audit. [8]

P.T.O.



- Q5) a)** For energy conservative project initial investment of Rs. 10,00,000 is required. The revenue generation for six years is Rs. 2,00,000, Rs. 2,00,000, Rs. 1,75,000 Rs. 2,50,000 Rs 1,75,000 and Rs. 2,00,000. Using discounting factor of 12% calculate net present value of the project. [9]
- b) Discuss the financial appraisal criteria for economic feasibility. [9]

OR

- Q6) a)** During energy audit it is decided to replace worn out induction motors with new high efficiency motors of same capacity. The specification of motors are given below. Calculate payback period by taking rate of electricity as Rs. 6/k Wh and demand rate as Rs. 350/kVA/month. [9]

Description	Old motor	Energy Efficiency Motors
Rating of machine	10HP	10 HP
Number of motors	20	20
Operating hours per annum each	6500	6500
Efficiency near full load	89%	93%
Power factor near full load	0.85 lag	0.89 lag
Capital cost	--	Rs. 60,000/- (each)
Scrap value	Rs. 7500/- (each)	--

- b) Discuss energy audit case study of textile industry. [9]
- Q7) a)** What is topping cycle cogeneration system? With suitable example explain cogeneration systems. [9]
- b) Explain various electrical energy efficient systems. [8]
- OR
- Q8) a)** Discuss energy saving options in pumps and piping systems. [9]
- b) Explain energy conservation in diesel generator system [8]

