Total No. of Questions : 11]

SEAT No. : [ ]

P1739

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[5460] - 569
T.E. (Electrical)
ENERGY AUDIT AND MANAGEMENT
(2015 Pattern)

Time : 2½ Hours] ***[Max. Marks :70***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
4) ***Assume suitable data, if necessary.***

Q1) What are the high lights of Energy Conservation Act 2001. **[6]**

OR

Q2) What is energy security? Explain energy security of nation. **[6]**

Q3) What is the energy management strategy? How it is useful? **[7]**

OR

Q4) With suitable example explain energy policy. Give standard format of the same. **[7]**

Q5) Explain steps in implementation of demand side management with suitable example. **[7]**

OR

Q6) Explain benefits and short comings of supply side management. **[7]**

P.T.O.

Q7) a) What are different types of audits? What is the importance of data in energy audit? Explain simple steps in data analysis is the importance of energy audit? Explain steps involved in detailed energy audit? **[10]**

b) What is least square method? Explain it in detailed. **[8]**

OR

Q8) a) The specific energy consumption of a process is varies linearly with expression of line is given by E = 0.4*P + 210. The monthly production is tabulated in the following table. Using following data calculate energy savings by using CuSum technique. Also draw CuSum graph. **[9]**

Month	Production	Actual Energy Consumption (kWh)
Apr. 17	400	450
May 17	450	510
June 17	430	530
July 17	389	490
Aug. 17	440	560
Sept. 7	471	620
Oct. 17	520	650
Nov. 17	540	670
Dec. 17	580	675

b) What are the requirements of monitoring systems? Explain role of different instruments in energy audit. **[9]**

Q9) Attempt any two of the following : **[16]**

a) Discuss energy conservation measures used in pumping systems.

b) Discuss the measures identified during energy audit for energy savings in coal fired boiler and auxiliary systems.

c) Compare standard motor with energy efficient motor on the basis of design, performance, operation, auxiliary etc.

Q10) a) During audit it is decided to replace 400 W sodium vapour lamp with two, 40 W LED lamps in street lights. The lamps are operational for 3500 hours. The cost of replacement of single LED fitting is Rs. 250. Total number of old fittings are approximately 10000. Calculate economic feasibility of project by calculating payback period. Comment on the conservation measure. Take cost of electricity is Rs. 5/kWh. **[8]**

b) Discuss with merits and demerits life cycle cost method. Is it superior than other methods? Justify. **[8]**

OR

Q11) a) Calculate Internal rate of return for following cash flows capital investment of Rs. 500000 and cash inflows for five years are Rs. 75000, Rs. 125000, Rs. 140000, Rs. 160000 and Rs. 100000. The available discounting rates are 10%, 14% and 18%. **[10]**

b) What is Time value of money? Explain its importance in financial appraisal. **[6]**

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