Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S)(FT/PT) Examinations April 2026 (2019 Scheme)

Course Code: EET424
Course Name: ENERGY MANAGEMENT

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1		Write a note on ECBC code	(3)
2		Define energy management. Give the objectives of energy management	(3)
3		What is cascade efficiency of an electrical system?	(3)
4		A plant has recorded a maximum demand of 600 kVA and average power factor is observed to be 0.82 lag. Calculate the improvement in power factor by installing 100 kVAr capacitors.	(3)
5		Explain the practical difficulties in Time of day pricing?	(3)
6		What is multi utility power exchange model?	(3)
7		Compare fire tube and water tube boiler	(3)
8		Explain combined cycle electricity generation	(3)
9		What are the merits of average rate of return?	(3)
10		What are the characteristics of life cycle costing?	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Explain various steps involved in Energy Management planning	(9)
	b)	What is building management system?	(5)

OR

12	a)	Classify energy audit? Explain the steps involved in detailed energy audit.	(9)
	b)	List down the major energy audit instruments	(5)

Module II

13	a)	Explain energy management opportunities in lighting system	(7)
	b)	What is luminous efficacy? Give the luminous efficacy of any five light sources	(7)

OR

14 a) Explain the present maximum efficiency standards for power and distribution transformers. (8)

b) A capacitor is rated for 100 kVAr at 415 V. The plant receives supply voltage at 400 V during daytime and 440 V during night time. What is the effect of supply voltage variation on kVAr delivered by capacitor bank? (6)

Module III

15 a) Explain main techniques used for power load management (8)

b) A plant has a two identical 500 kVA transformers each with a no load loss of 840 W and full load copper loss of 5700 W. The plant load is 400 kVA. Compare the transformer losses when single transformer is operation and when both transformer are in parallel operation (6)

OR

16 a) What is meant by Ancillary services? Which are the types of Ancillary services? (8)

b) Explain the step by step procedure for controlling maximum demand in a plant (6)

Module IV

17 a) Explain about a furnace? What are the characteristics of a good furnace? (5)

b) Explain the process of boiler blowing down. What are the Benefits of boiler blow down? (9)

OR

18 a) Explain various Energy saving opportunities in Steam system (9)

b) Explain operating schemes of cogeneration (5)

Module V

19 a) A proposed project requires an initial capital investment of Rs 20000.The cash flows generated by the project are shown in the table. Find out the internal rate of return for the project (10)

Year	0	1	2	3	4	5	6
Cash flow (Rs)	-20000	+6000	+5500	+5000	+4500	+4000	+4000

b) List out the advantages and disadvantages of simple pay back period (4)

OR

20 a) Write short note on (i) Internal rate of return method (ii) simple payback period approach (c) time value of money (8)

b) Calculate the net present value of an investment towards an LED lamp with cash flow as follows. Assume the discount rate as 10%. (6)

Years	0	1	2
Cash flows (Rs)	400	700	700

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