

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***Eighth Semester, B.E. - Electrical and Electronics Engineering****Semester End Examination; July - 2023****Energy Auditing and Demand Side Management**

Time: 3 hrs

Max. Marks: 100

**Course Outcomes****The Students will be able to:**

CO1: Analyze the Energy situation in the world and India, Energy consumption Energy Economic Analysis.

CO2: Demonstrate Energy Auditing.

CO3: Analyze Electrical Equipment and power factor correction.

CO4: Demonstrate the Demand Side Management.

CO5: Analyze the Load management.

**Note: I) PART - A is compulsory. Two marks for each question.****II) PART - B: Answer any Two sub questions (from a, b, c) for a Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
<b>I : PART - A</b>		<b>10</b>			
1 a.	What is ABT?	2	L1	CO1	PO2
b.	Define Energy Audit.	2	L1	CO2	PO1
c.	Mention the disadvantages of low power factor.	2	L1	CO3	PO1
d.	Define the term strategic energy conservation with respect to DSM.	2	L1	CO4	PO2
e.	Mention the factors which influence customer acceptance of DSM.	2	L1	CO5	PO2
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
2 a.	Explain the energy conservation techniques used to reduce energy cost.	9	L2	CO1	PO2
b.	Write a note on objectives of energy conservation Act 2001.	9	L2	CO1	PO6
c.	How long will it take for a sum of money to double, when accumulating at 5% interest?				
	i) On simple interest basis	9	L3	CO1	PO2
	ii) If interest is compounded annually				
	iii) If interest is compounded quarterly				
	iv) If interest is compounded on true compound interest basis.				
<b>UNIT - II</b>		<b>18</b>			
3 a.	Explain ten steps methodology for detailed energy auditing.	9	L3	CO2	PO2
b.	What are energy management strategies? Explain them in brief.	9	L3	CO2	PO2
c.	Explain energy audit instruments.	9	L2	CO2	PO5

**UNIT - III****18**

- 4 a. Mention causes of low power factor. Also write the advantages of high power factor. 9 L2 CO3 PO2,6
- b. Write a note on:
- i) Synchronous condenser 9 L2 CO3 PO2,3
- ii) Static capacitor
- c. A single phase motor connected to 400 V, 50 Hz supply takes 31.7 A at a p.f of 0.7 lagging .Calculate the capacitance required parallel with the motor to raise the p.f to 0.9 lagging. 9 L3 CO3 PO2,3

**UNIT - IV****18**

- 5 a. Explain the benefits of DSM. 9 L2 CO4 PO2
- b. With a flowchart, explain DSM planning and implementation. 9 L3 CO4 PO2
- c. Discuss the various tariff options for DSM implementation. Mention the factors which influence customer acceptance of DSM. 9 L3 CO4 PO2,6

**UNIT - V****18**

- 6 a. Explain peak clipping and valley filling with relevant diagrams. 9 L3 CO5 PO2
- b. Explain energy conservation opportunities in:
- i) Agricultural sector 9 L3 CO5 PO7
- ii) Industrial sector
- c. Explain plant level organization with relevant flowchart. 9 L2 CO5 PO3

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