B.E. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester-VIII
OEC-4-2 - Electrical Energy Conservation and Auditing

P. Pages : 2

Time : Three Hours

2606

Max. Marks : 80

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Notes :
1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
6. Use of slide rule, Logarithmic tables is permitted.
7. Non programmable calculator is permitted.

1. a) Write about energy conservation Act-2001 and its feature. **8**

b) Explain the challenges and opportunity for Energy Security in India. **8**

OR

2. a) What Is the Role of Commercial and Non-Commercial Energy Sources in Country's Economy? **8**

b) Write energy sector reforms in India. **8**

3. a) What is the role of capacitors in electrical energy transmission? Comment on selection and location of capacitors. **8**

b) Define following terms **8**
   a) Evaporation   b) Condensation
   c) Moist air   d) Humidity

OR

4. a) Define the terms **8**
   a) Heat capacity
   b) Sensible heat
   c) Latent heat
   d) Temperature and pressure

b) Define the term tariff used in electricity bill? Write a short note on contract demand and maximum demand. **8**

5. a) What are the major steps involved in an electrical energy audit? Explain with a suitable example. **8**

b) Define energy management and write down its various objectives. **8**

OR

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6.	a)	Write down the various names of instruments required for performing an energy audit and explain how they work?	**8**
	b)	Draw and explain the material and energy balance diagram.	**8**
7.	a)	A 3-phase, 415 V, 100 kW induction motor is drawing 50 kW at a 0.75 PF Calculate the capacitor rating requirements at motor terminals for improving PF to 0.95. Also calculate the reduction in current drawn and kVA reduction, from the point of installation back to the generated side due to the improved PF.	**8**
	b)	Write a performance assessment of power factor capacitors.	**8**

<div align="center">**OR**</div>

8.	a)	What are the cost benefits of PF improvement? Write advantages of PF improvement.	**8**
	b)	A process plant consumes of 12500 kWh per month at 0.9 Power Factor (PF). What is the percentage reduction in distribution losses per month if PF is improved up to 0.96 at load end?	**8**
9.	a)	Write fans and blowers types. Also write performance evaluation.	**8**
	b)	What are the types of air compressors, and comment on compressor efficiency?	**8**

<div align="center">**OR**</div>

| **10.** | a) | Illustrate energy efficient technologies in electrical systems in detail. | **8** |
| | b) | Explain the working of a soft starter and its advantage over other conventional starters. | **8** |

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