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BTECH
(SEM VII) THEORY EXAMINATION 2024-25
ENERGY CONSERVATION AND AUDITING

TIME: 3 HRS

M.MARKS: 100

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

Q no.	Question	CO	Level
a.	Discuss the need of energy planning and audit?	1	K2
b.	Define energy intensity and its importance in energy conservation.	1	K1
c.	Differentiate between Demand Side Management (DSM) and energy efficiency.	2	K2
d.	Explain the concept of Energy Management Information Systems (EMIS).	2	K2
e.	Discuss the key elements of an energy audit report?	3	K2
f.	Name two instruments commonly used in energy audits and their purpose.	3	K1
g.	Explain the importance of series and parallel operation in pump performance optimization?	4	K2
h.	Discuss the methods of improvement of efficiency in pumps.	4	K2
i.	Describe the benefits of using energy-efficient motors?	5	K1
j.	Briefly describe the impact of voltage variations on lighting efficiency.	5	K2

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

Q no.	Question	CO	Level
a.	Illustrate the Indian energy scenario and its sectorial energy consumption patterns.	1	K3
b.	Explain the planning and implementation phases of Demand Side Management (DSM) strategies.	2	K4
c.	Explain the strategies involved in conducting an energy audit and their significance.	3	K5
d.	Analyze the energy-saving techniques for compressed air systems with examples.	4	K4
e.	Compare and contrast simple payback and life cycle cost assessment for energy-efficient devices.	5	K4

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

Q no.	Question	CO	Level
a.	Elaborate on the long-term energy strategy for a growing economy, considering energy security.	1	K2
b.	Discuss the key features of the Electricity Act 2003 and its role in energy conservation.	1	K2

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4. Attempt any one part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Explain the Cumulative Sum of Differences (CUSUM) technique used in energy monitoring.	2	K4
b.	Explain the UDAY scheme and its impact on energy conservation for DISCOMs.	2	K4

5. Attempt any one part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Explain what are the considerations for forming an energy management team in industries?	3	K4
b.	Explain the various steps involved in detailed energy audit.	3	K4

6. Attempt any one part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Explain the performance assessment and energy-saving options for cooling towers.	4	K4
b.	Explain the types and applications of blowers, highlighting their energy saving opportunities.	4	K5

7. Attempt any one part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Illustrate about energy efficient motor and compare it with standard motors.	5	K3
b.	Demonstrate the role of compact fluorescent lamps (CFLs) and LED lighting in energy conservation.	5	K3