**18EEI04**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **April,2023** | **Institutional Elective (Common to all branches)** | | |
| **Eighth Semester** | **Electrical Energy Conservation & Auditing** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | What do you mean by energy audit? | CO1 | L1 | 1M |
|  | b) | What is a building envelope. And what is it? | CO1 | L2 | 1M |
|  | c) | Define energy index and cost index parameters | CO1 | L1 | 1M |
|  | d) | What is an energy efficient motor? | CO2 | L2 | 1M |
|  | e) | Find the motor loss of a standard 10-hp electric motor may have an efficiency range of 81%. | CO2 | L3 | 1M |
|  | f) | Why the terms data logging and data acquisition are often used as interchangeably? | CO3 | L2 | 1M |
|  | g) | Define programmable logic controller with some application of it. | CO3 | L2 | 1M |
|  | h) | Which is the best location for capacitor banks for power factor improvement from energy conservation point of view? | CO3 | L2 | 1M |
|  | i) | Define simple payback period. | CO4 | L1 | 1M |
|  | j) | What is meant by straight line depreciation? | CO4 | L1 | 1M |
| **Unit -I** | | | | | |
| 2. | a) | Write down the stepwise performing of detailed energy audit. | CO1 | L2 | 5M |
|  | b) | Define & Explain pie-chart, Sankey diagrams and Load profiles. | CO1 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 3. |  | Explain about the schemes of energy conservation in detail. | CO1 | L2 | 10M |
|  |  | **Unit -II** |  |  |  |
| 4. | a) | Explain over motoring and also discuss about the concepts of energy conservation in drive power. | CO2 | L3 | 5M |
|  | b) | Explain in detail about root mean squared horsepower loading method. | CO2 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 5. | a) | Explain the constructional details of energy efficient motors with some applications. | CO2 | L2 | 5M |
|  | b) | Explain voltage variation and voltage unbalance of an electric motor. | CO2 | L2 | 5M |
|  |  | **Unit -III** | |  |  |
| 6. | a) | Explain power factor improvement method of synchronous condenser with advantages and disadvantages. | CO3 | L2 | 5M |
|  | b) | List out the sources of harmonics and explain the effects of harmonics on power factor. | CO3 | L1 | 5M |
|  |  | **(OR)** |  |  |  |
| 7. |  | Describe in detail of watt meter, data loggers, thermocouples, lux meters and tong testers. | CO3 | L2 | 10M |
|  |  | **Unit -IV** |  |  |  |
| 8. |  | A proposed project requires an initial capital investment of Rs.20 000. The cash flows generated by the project are shown in the table below:  Year Cash flow (Rs.)  0 –20,000.00  1 +6000.00  2 +5500.00  3 +5000.00  4 +4500.00  5 +4000.00  6 +4000.00  Given the above cash flow data, let us find out the internal rate of return for the project. | CO4 | L3 | 10M |
|  |  | **(OR)** |  |  |  |
| 9. | a) | Explain life cycle cost analysis of motor and lighting systems. | CO4 | L2 | 5M |
|  | b) | What is depreciation? Explain various depreciation methods in detail. | CO4 | L2 | 5M |

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