**18EED12**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **August, 2021** | **Electrical and Electronics Engineering** | | |
| **Sixth Semester** | **Electrical Energy Conservation and Auditing** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Questions No.1 compulsorily* | | | (1X10 = 10 Marks) |
| *Answer* ***One*** *question from each unit* | | | (4X10=40 Marks) |

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| 1. | Answer all questions | | (1X10=10 Marks) | |
|  | a) | List the types of audit. | | CO1, L1 |
|  | b) | What do you mean by energy index? | | CO1, L1 |
|  | c) | Write steps involved in pre-audit phase. | | CO1, L1 |
|  | d) | What is energy management? | | CO1, L1 |
|  | e) | How voltage variation affects motor efficiency? | | CO2, L1 |
|  | f) | Why we should use energy-efficient motors? | | CO2, L1 |
|  | g) | What is benefit of power factor improvement? | | CO3, L1 |
|  | h) | What is the purpose of tong tester ? | | CO3, L1 |
|  | i) | List two depreciation methods | | CO4, L1 |
|  | j) | Define payback period. | | CO4, L1 |
| **UNIT-I** | | | | |
| 2. |  | Explain different energy conservation schemes. | | CO1, L2 10M |
| **(OR)** | | | | |
| 3. |  | Write about different principles of energy management. | | CO1, L2 10M |
| **UNIT-II** | | | | |
| 4. | a) | What are the different factors that affect the efficiency of motor? | | CO2, L2 5M |
|  | b) | Explain voltage variation and voltage unbalance of electric motor. | | CO2, L3 5M |
| **(OR)** | | | | |
| 5. | a) | Write a short note on characteristics of energy efficient motors. | | CO2, L2 5M |
|  | b) | Explain loss distribution in energy efficient motors. | | CO2, L2 5M |
| **UNIT-III** | | | | |
| 6. |  | Explain the different methods to improve power factor. | | CO3, L2 10M |
| **(OR)** | | | | |
| 7. | a) | What are the factors to be considered for lighting energy audit? | | CO3, L2 5M |
|  | b) | Describe in detail of energy instruments like watt meter and data loggers. | | CO3, L2 5M |
| **UNIT-IV** | | | | |
| 8. |  | The equipment in substation costs Rs 30, 50,000 and has a salvage value of Rs 50,000 at the end of 15 years. Determine the depreciated value of the equipment at the end of 10 years on the following methods:  (i) Straight line method;  (ii) Diminishing value method  (iii)Sinking Fund Method at 7% compound interest annually. | | CO4, L3 10M |
| **(OR)** | | | | |
| 9. | a) | Explain the terms time value of money and rate of return by considering an example | | CO4, L2 5M |
|  | b) | Write the steps involved in calculation of simple payback method. | | CO4, L2 5M |

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**Scheme of evaluation**

**18EED12**

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| **III/IV B.Tech (Regular\Supplementary) DEGREE EXAMINATION** | | | |
| **July , 2021** | **Electrical and Electronics Engineering** | | |
| **Sixth Semester** | **Electrical Energy Conservation and Auditing** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Questions No.1 compulsorily* | | | (1X10 = 10 Marks) |
| *Answer* ***One*** *question from each unit* | | | (4X10=40 Marks) |
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| 1. | Answer all questions | | (1X10=10 Marks) | |
|  | a) | Any two the types of audit……………………………………………….. 1M | | CO1, L1 |
|  | b) | Energy index meaning……………………………………………………. 1M | | CO1, L1 |
|  | c) | Steps involved in pre-audit phase…………………………………………..1M | | CO1, L1 |
|  | d) | Energy management meaning………………………………………………1M | | CO1, L1 |
|  | e) | Voltage variation effects on motor efficiency………………………………1M | | CO2, L1 |
|  | f) | Benefit of use energy-efficient motors……………………………………...1M | | CO2, L1 |
|  | g) | Benefit of power factor improvement………………………………………1M | | CO3, L1 |
|  | h) | Purpose of tong tester………………………………………………………1M | | CO3, L1 |
|  | i) | Any two depreciation methods……………………………………………..1M | | CO4, L1 |
|  | j) | Payback period definition…………………………………………………………...1M | | CO4, L1 |
| **UNIT-I** | | | | |
| 2. |  | Writing the names of different energy conservation schemes……………..4M  Explanation of different energy conservation schemes. …………………..6M. | | CO1, L2 10M |
| (OR) | | | | |
| 3. |  | Listing different principles of energy management………………………..4M  Explanation about different principles of energy management……………6M | | CO1, L2 10M |
| **UNIT-II** | | | | |
| 4. | a) | Different factors that affect the efficiency of motor ……………………...5M | | CO2, L2 5M |
|  | b) | Data given with proper variable names……………………………………1M  Formulas……………………………………………………………………2M  Substitution and calculation of annual cost saving....................................2M | | CO2, L3 5M |
| (OR) | | | | |
| 5. | a) | Short note on characteristics of energy efficient motors…………………..5M | | CO2, L2 5M |
|  | b) | Explanation about loss distribution in energy efficient motors…………..5M | | CO2, L2 5M |
| **UNIT-III** | | | | |
| 6. |  | Listing different methods to improve power factor………………………...4M  Explanation about methods to improve power factor……………………….6M | | CO3, L2 10M |
| (OR) | | | | |
| 7. | a) | Factors to be considered for lighting energy audit…………………………5M | | CO3, L2 5M |
|  | b) | Explanation about Watt meter .....................................................................3M  Explanation about Data loggers……………...............................................2M | | CO3, L2 5M |
| **UNIT-IV** | | | | |
| 8. |  | Data given with proper variable names……………………………………..1M  Formulas…………………………………………………………………....3M  Substitution and calculation using Straight line method, Diminishing value method, Sinking Fund Method at 7% compound interest annually ...................6M | | CO4, L3 10M |
| (OR) | | | | |
| 9. | a) | Explanation of the terms time value of money and rate of return…………..2M Example……………………………………………………………………....3M | | CO4, L2 5M |
|  | b) | Steps involved in calculation of simple payback method…………………....5M | | CO4, L2 5M |