## SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
### (AUTONOMOUS)
**B.Tech IV Year I Semester Regular Examinations February-2024**
### UTILIZATION OF ELECTRICAL ENERGY
(Electrical & Electronics Engineering)

**Time: 3 Hours**                                                                 **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

### UNIT-I

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Write short notes on polar curves and explain the Rousseau's construction for calculating MSCP of lamp. | CO1 | L1 | 6M |
| | b | A filament lamp of 500W is suspended at a height of 4.5 m above the working plane and gives uniform illumination over an area of 6 m diameter. Assuming an efficiency of the reflector as 70% and efficiency of lamp as 0.8 watt per candle power, determine the illumination on the working plane. | CO1 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2 | a | Explain with sketch the principle and operation of fluorescent lamp. | CO1 | L3 | 6M |
| | b | Write short notes on flood lighting. | CO1 | L2 | 6M |

### UNIT-II

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Write briefly about ultrasonic welding and defects in welding process. | CO2 | L3 | 6M |
| | b | Differentiate between A.C and D.C welding. Discuss about the techniques used for arc welding. | CO2 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | Discuss the advantages of reverse current process of electro plating. | CO2 | L2 | 6M |
| | b | Discuss faraday's laws and applications of electrolysis in detail. | CO2 | L2 | 6M |

### UNIT-III

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|---|---|---|---|---|---|
| 5 | | What is temperature rise in motor? Derive the equation for Heating of Motor. | CO3 | L2 | 12M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | a | What is load equalization. | CO3 | L3 | 6M |
| | b | what are the advantages of group drive. | CO3 | L2 | 6M |

### UNIT-IV

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | Discuss the speed-time curves for urban service. | CO4 | L2 | 6M |
| | b | A sub urban electric train has a maximum speed of 70 km/hr. The schedule speed including a station stop of 30 sec in 45 km/hr. If the acceleration is 1.5 km/hr/sec. Find the value of retardation when the average distance between stops is 600 m. | CO4 | L3 | 6M |

**OR**

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|---|---|---|---|---|---|
| 8 | | Describe how Plugging, Rheostatic braking and Regenerative braking are employed with DC series motor. | CO4 | L2 | 12M |

### UNIT-V

| | | | | | |
|---|---|---|---|---|---|
| 9 | | A train is to run between two stations 1.6 km apart at an average speed of 40 kmph, the run is to be made to a quadrilateral N-T curve. Maximum speed is to be limited to 64 kmph, acceleration, to 2 kmphps, coasting retardation to 0.16, and braking retardation to 3.2, determine the duration of a acceleration, coasting and braking periods. | CO5 | L3 | 12M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | a | Write short notes on specific energy consumption. | CO5 | L1 | 6M |
| | b | What factors affect the specific energy consumption. | CO5 | L1 | 6M |

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