

III B. Tech II Semester Supplementary Examinations, November - 2018
UTILIZATION OF ELECTRICAL ENERGY
 (Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | | |
|---|----|-------------------------------------------------------------------|------|
| 1 | a) | List out types of electric drives with brief explanation of each. | [3M] |
| | b) | List out modes of transfer of heat with relevant expressions. | [4M] |
| | c) | Explain the terms MSCP and MHCP | [4M] |
| | d) | List out the drawbacks of metal filament lamps. | [4M] |
| | e) | Explain the term Specific Energy Consumption | [4M] |
| | f) | Define percentage gradient in railways, and what for it is used. | [3M] |

PART -B

- | | | | |
|---|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | a) | Explain about the different speed torque characteristics of different machines and give their utility in selection for Industrial loads. | [8M] |
| | b) | List out and explain various speed control methods of 3-phase Induction motors. | [8M] |
| 3 | a) | Discuss about the properties of heating elements. Explain about any two types of induction furnaces. | [6M] |
| | b) | Explain about metal arc welding, submerged arc welding methods with necessary illustrations. | [6M] |
| | c) | Compare DC and AC welding sets. | [4M] |
| 4 | a) | Explain about the following factors used in illumination
i. Space-height ratio ii. Utilization factor
iii. Maintenance factor iv. Depreciation factor | [8M] |
| | b) | Explain the procedure to determine the mean spherical candle power from the vertical polar curve. | [8M] |
| 5 | a) | State stroboscopic effect. Explain the working of fluorescent tube with neat connection diagram incorporating glow type starter. | [8M] |
| | b) | Discuss the different interior lighting schemes for controlling distribution of the light emitted by lamps. | [8M] |
| 6 | a) | Explain about the following vehicles w.r.t electric traction
i) Tramways ii) Trolley buses iii) Diesel traction | [6M] |
| | b) | Demonstrate the procedure to study the performance of a service at different schedule speeds using simple geometric shaped curves with necessary derivation. | [10M] |
| 7 | a) | Deduce the necessary expression to calculate total tractive effort required to run a train on track. | [10M] |
| | b) | List out and explain the principles of energy efficient motors. | [6M] |

