

Seat No.: _____

Enrolment

No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1720711

Date: 25-06-2014

Subject Name: Electrical Power Utilization

Time: 02:30 pm - 05:00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Draw the typical speed-time curve for main line service and explain its different parts. **07**
- (b)** The speed time curve of a train consists of : **07**
- (i) Uniform acceleration of 6 Km/h/s for 21 s.
 - (ii) Free running for 10 minutes.
 - (iii) Uniform deceleration of 6 km/h/s to stop the train.
 - (iv) A stop of 5 minutes.
- Find the distance between the stations, the average speed and the schedule speed.
- Q.2 (a)** Discuss track electrification in detail. **07**
- (b)** Explain regenerative braking used in traction system. **07**
- OR**
- (b)** Explain the technology of Hybrid electric vehicles. **07**
- Q.3 (a)** What is resistance welding? Explain butt welding with necessary diagrams. **07**
- (b)** What are the advantages of electrically produced heat? **07**
- Explain working principle of dielectric heating.
- OR**
- Q.3 (a)** Explain indirect core type induction furnace. **07**
- (b)** Comparison between Resistance welding and Arc welding. **07**
- Q.4 (a)** The illumination of drawing office 30 m × 12 m is to have a value of 50 meter candle. If the utilization factor is 0.5 and depreciation factor is 1.3, Calculate space to height ratio and the number of lamps and wattage of each lamp for uniform light distribution. **07**
- | | | | | | |
|--------|------|------|------|------|-------|
| Watts | 100 | 200 | 300 | 500 | 1000 |
| Lumens | 1615 | 3650 | 4700 | 9950 | 21500 |
- (b)** What is flood lighting? Explain how it is provided and its design consideration. **07**
- OR**
- Q.4 (a)** Explain the terms (A) Illumination (B) M.H.C.P. (C) Glare (D) Brightness **07**
- (b)** Explain design consideration of heating element. **07**
- Q.5 (a)** Explain electro deposition processes and discuss various factors governing the electro deposition processes. **07**
- (b)** Explain construction and working of washing machine. **07**
- OR**
- Q.5 (a)** State and explain faraday's law of electrolysis. **07**
- (b)** What do you understand by refrigerator? Draw and explain the electric circuit used in a refrigerator. **07**
