

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020**Subject Code:3152411****Date:01/02/2021****Subject Name:Electrical Power Utilization & Traction****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Give classification of electric welding in tree form. **03**
(b) Explain pinch-off effect in induction heating. **04**
(c) Explain the principle of dielectric heating with suitable diagram. **07**
- Q.2** (a) State advantage of electric welding. **03**
(b) Discuss faraday's first law of electrolysis. **04**
(c) State principle of resistance welding and explain any two types of resistance welding. **07**
- Q.3** (a) State factors effecting in electro deposition. **03**
(b) Define following terms with respect to illumination :(a) Luminous flux. **04**
(b) candle power (c) Lamp efficiency (d) Solid angle
(c) State and explain laws of illumination. **07**
- Q.4** (a) Write the basic requirements of street lighting. **03**
(b) Compare filament lamp with fluorescent lamp in tabular form. **04**
(c) Discuss various types of electric motors used for electric traction. **07**
- Q.5** (a) State the factors affecting selection of drive. **03**
(b) Write a short note on rheostat braking used in traction system. **04**
(c) With suitable graphs explain performance characteristics of: (i) DC series motor (ii) induction motor. **07**
- Q.6** (a) State the main requirements of an ideal traction system. **03**
(b) Discuss advantages of electric traction. **04**
(c) Explain block diagram of an electric locomotive describing various equipment and accessories **07**
- Q.7** (a) Write a short note on third rail system of current collection. **03**
(b) Explain concept of hybrid electric drive trains. **04**
(c) Explain trapezoidal speed-time curve with necessary equation. **07**
- Q.8** (a) Draw architecture of hybrid electric drive trains. **03**
(b) Discuss advantage of electrical braking over mechanical braking. **04**
(c) Explain series hybrid electric drive and parallel hybrid electric drive. **07**
