

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2013

Subject Code:180902**Date: 13/05/2013****Subject Name: Electrical Power Utilization****Time: 10:30 am TO 01:00 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) Give classification of electric drive and also discuss factors affecting choice of an electric drive? **07**
- (b) Discuss rheostatic braking applied to d.c motor with neat sketch **07**
- Q.2** (a) A 25 hp motor with a heating time constant of 100 minutes has a final temperature rise of 40°C on continuous rating .Find the half hour rating of the motor for this temperature rise assuming that it cools down completely between each load period. The motor has maximum efficiency at 85% of its full load **07**
- (b) Give your choice of motors for the following drives(1) lathe(2)hoist (3)cement kiln. Also give reason for selection with ac supply and d.c supply **07**
- OR**
- (b) Explain speed control method for d.c.series motor with neat sketch **07**
- Q.3** (a) Discuss track electrification in detail. **07**
- (b) Draw typical speed time curve for main line and derive expression for max speed using trapezoidal speed time curve **07**
- OR**
- Q.3** (a) An electric train weighing 200 tonnes runs a uniform upgradient of 1% with the following speed-time curve Uniform acceleration of 2 kmphps for 30 seconds, Constant speed for 40 second, Coasting for 30 seconds, Braking at 2.5 kmphps to rest, Stop at station 15 seconds. If the tractive resistance is 40 N/tonne, rotational inertia effect 10% of dead weight and overall efficiency of transmission and motor is 75% determine (1)Schedule speed (2) specific energy consumption (3) total energy consumption (4) distance between two station. **07**
- (b) Explain following term (1) co-efficient of adhesion(2) schedule speed(3)specific energy consumption **07**
- Q.4** (a) Explain indirect type arc furnace with neat sketch **07**
- (b) Give brief note on eddy current heating **07**
- OR**
- Q.4** (a) Discuss advantages of electric welding and give classification of electric welding. **07**
- (b) Give short notes on energy storage welding process **07**
- Q.5** (a) Define following terms with respect to illumination :(1) Lux (2) MHCP(3) lamp efficiency(4)solid angle. **07**
- (b) Discuss factors affecting in designing in lighting scheme **07**
- OR**
- Q.5** (a) Explain laws of electrolysis **07**
- (b) Discuss factors affecting in electro deposition **07**
