

EEE

Roll No. 

--	--	--	--	--	--	--	--	--	--

**B.E / B.Tech ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

Semester 7

**EE 9402 Utilisation and Conservation of Electrical Energy**

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. Differentiate group drive and individual drive.
2. Why dc series motor is ideally suited for traction purposes.
3. Define solid angle.
4. What is the function of a starter for a fluorescent tube?
5. What are the advantages of electric heating?
6. What are the various types of welding?
7. Write the various refrigeration systems.
8. Define thermodynamics of human body.
9. Define tariff.
10. Define short time and intermittent duty of an electric motor.

**Part – B ( 5 x 16 = 80 marks)**

11. (i) Classify the applications of motors for particular services. (6)

(ii) Two motors of a motor coach are started on series-parallel system, the current per motor being 350 A (considered being constant) during the starting period which is 18 sec. If the acceleration during starting period is uniform, the line voltage is 600 V and resistance of each motor is 0.1 ohm. Calculate (i) The time during which the motors are operated in series. (ii) The energy loss in the rheostat during starting period.

(10)

12. a) Explain the construction and working of a sodium vapour lamp.

(OR)

b) In detail describe the street lighting.

13. a) Describe the direct and indirect arc furnace.

**(OR)**

b) With a necessary diagram describe the different types of electric arc welding.

14. a) Describe the construction and working of water cooler.

**(OR)**

b) Explain the working, advantages and disadvantages of a unitary system of air-conditioning.

15. a) What are the assumptions made in deriving the heating and cooling curve of an electric motor and derive the heating and cooling curve of a motor.

**(OR)**

b) After operating for 30 min on full-load, the temperature of a motor is  $55^{\circ}\text{C}$  and after 60 min on the same load, the temperature becomes  $70^{\circ}\text{C}$ . The ambient temperature may be assumed to be  $30^{\circ}\text{C}$ . Calculate the (a) final temperature and (b) heating time constant. How long will it take for temperature to rise to  $5/6^{\text{th}}$  of its final steady state value, after the start of the motor?