

Total No. of Questions :5]

[Total No. of Printed Pages 2

Roll No.....

EX - 501

B.E. V Semester

Examination, December 2014

### Utilization of Electrical Energy

Time: Three hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

#### Unit. I

1. a) Explain solid angle.
- b) What is glare. Explain in brief.
- c) State the law of illumination.
- d) Explain the working of fluorescent tube with the help of circuit diagram giving the function of various parts.

OR

Two lamp posts are 16 m apart and are fitted with a 100 cp lamp each at a height of 6m above the ground. Calculate the illumination on the ground under each lamp and midway between the lamps.

#### Unit. II

2. a) What are the advantage of electric heating.
- b) What is the fundamental difference between electric arc welding and resistance welding.
- c) What is electrolysis. Explain briefly.
- d) What is dielectric heating. Explain the factor on which the dielectric loss in a dielectric materials depends.

[2]

OR

Explain with the help of a neat sketch diagram the working of Ajax Wyatt furnace. What is its field of application.

#### Unit. III

3. a) What do you mean by "electric traction".
- b) What do you understand by speed time curves.
- c) What do you mean by braking! Explain with example.
- d) A train is required to run between two stations 1.5 km apart at a schedule speed of 36 km/h. The duration of stops being 25 seconds. The braking retardation is 3 km/h/s. Assuming a trapezoidal speed time curve. Calculate the acceleration if the ratio of maximum speed to average speed is to be 125.

OR

Explain the terms:

- i) Adhesive weight ii) Train resistance

#### Unit. IV

4. a) What do you mean by electrical drives.
- b) Write the difference between group drive and individual drive.
- c) Explain air conditioning in brief.
- d) What do you mean by load equalization explain with example.

OR

Explain regenerative braking with neat sketch circuit diagram.

#### Unit. V

5. a) What do you mean by electrical vehicles.
- b) What is tractive effort. Explain in brief
- c) Write the characteristics of traction motor.
- d) What do you mean by performance of vehicles. Explain in detail.

OR

Write short notes on:

- i) Energy consumption
- ii) Configuration of electrical vehicles.