*Total No. of Questions : 8]* *[Total No. of Printed Pages : 2*

**Roll No** .....

# EE-703(A)-CBGS

## B.Tech., VII Semester

Examination, December 2020

## Choice Based Grading System (CBGS)

### Utilization of Electrical Energy

***Time : Three Hours***

***Maximum Marks : 70***

***Note:*** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain the role of ignition contractor in welding process. What are its advantages over mechanical switches?
   b) Describe the principle of electro deposition in electrolyte process.

2. a) Explain the faradays law of electrolysis.
   b) What are the advantage and disadvantages of electric heating?

3. a) Explain the different braking method employed in DC motor.
   b) State and Explain the different system of Electric Traction.

4. a) Describe the principle of Arc welding.
   b) What are the advantages and disadvantages of Dielectric Heating?

5. a) What do you understand by resistance welding? Discuss the effect of welding time of resistance welding on the quality of the weld.

b) Draw and explain general speed-time curve of a train running between two stations. How can this curve be approximated for
   i) main line service
   ii) suburban service

6. a) Explain laws of illumination and also describe various factors to be considered for good lighting.
   b) Discuss the main advantage of series-parallel control of motors over Rheostatic method of starting and speed control.

7. An electric train weighing 500 tonnes climbs up-gradient with G = 8 and following speed-time curve:
   i) Uniform acceleration of 2.5 km/hr/sec. for 60 sec.
   ii) Constant speed for 5 min.
   iii) Coasting speed for 3 min.
   iv) Dynamic breaking at 3 kmphs to rest.
   The train resistance is 25 N/ton, rotational inertia effect 10% and combined efficiency of transmission and motor is 80%. Calculate the specific energy consumption.

8. a) Explain clearly the pinch-effect and skin effect. Differentiate between any two types of furnaces.
   b) What are the main faults of lightning system and how they are overcome? In a street lightning scheme, lamps having uniform Candlepower (C.P.) of 500 are hung at 600 meters. The distance between consecutive lamp poles is 8 meters. Find the illumination under the lamp and at center in between the lamp posts.

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