



B.Tech VIII Semester Regular/Supplementary Examinations, April 2023

Utilization of Electrical Energy
(Electrical and Electronics Engineering)

Maximum Marks: 70

Date:08.05.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

- 1 What do you mean by Load Equalization? (10x2M=20 Marks)
- 2 List the disadvantages of electric drives.
- 3 What is a coreless induction furnace?
- 4 Mention the various welding processes used in general engineering.
- 5 State the Lambert's cosine law of illumination.
- 6 Give the principle of photometry.
- 7 List the merits of electric traction.
- 8 Why is DC series motor suited for traction applications?
- 9 What is specific energy consumption in electric traction?
- 10 How do braking retarder work?

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 A. Explain the different types of drives. Add a discussion on the advantages of electric drive over other drives. (5)
B. Explain the various methods of speed control of AC motors. (5)

OR
- 12 A. Discuss the various factors governing the choice of motors. (5)
B. Explain the various industrial loads and compare continuous and intermittent loads. (5)
- 13 Briefly describe the methods of direct and indirect resistance heating and list the applications of these two methods. (10)

OR
- 14 Give an account of the different methods of electric welding and their advantages. (10)

- 15 A. Explain the different types of lamps. (4)
B. Compare between MV and SV lamps. (6)

OR

- 16 A. Compare a tungsten filament lamp with fluorescent lamp in detail. (4)
B. Discuss the flood lighting with suitable diagram. (6)
- 17 A. Present a brief review on the existing electric traction systems in India. (4)
B. Discuss the main features of various train services. What type of train services corresponds to trapezoidal and quadrilateral speed time curves? (6)

OR

- 18 Describe how plugging, rheostat braking, and regenerative braking are employed with DC series motor. (10)
- 19 Explain and derive the necessary relation for the total tractive effort for the propulsion of the train. (10)

OR

- 20 A. Define Acceleration and Retardation. (2)
B. An electric train has an average speed of 42 km/h on a level track between stops 1.4 km apart. It is accelerated at 1.7 km/h/s and braked at 3.3 km/h/s. Assuming tractive resistance as 50 N/t. Allowing 10% for rotational inertia and 85% efficiency to motors. Estimate the specific energy consumption. (8)