8E8044

Roll No. |

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B.Tech. VIII-Sem (Main & Back) Exam September 2020
Electrical & Electronics Engg.
8EX4.1A Utilization of Electrical Power
EE,EX

Time: 2 Hours

Maximum Marks: 48
Min. Passing Marks: 16

Instructions to Candidates:

*Attempt **three questions,** selecting **one question each** from any three **unit.** All Questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1. NIL

2. NIL

UNIT- I

Q.1 Classify and explain different types of electric heating. [16]

OR

Q.1 What is welding? Explain various types of electric welding. [16]

UNIT- II

Q.2 (a) Discuss the law of illumination and its limitations. [8]

(b) Define following terms - [8]

(i) Illumination

(ii) Brightness

(iii) Mean horizontal candle power

(iv) Mean spherical candle power

(v) Lamp efficiency

(vi) Maintenance factor

(vii) Utilization factor

(viii) Specific consumption

OR

Q.2 (a) Give the comparison of Incandescent lamp, Fluorescent lamp, Mercury vapour lamp and Sodium vapour lamp. [10]

(b) What is flood lighting and where it is used? [6]

UNIT- III

Q.3 (a) Explain basic principle of electrolysis and discuss its applications. [8]

(b) Explain the following terms used in electrolytic processes- [8]

(i) Current efficiency

(ii) Energy efficiency

(iii) Throwing power

(iv) Electro chemical equivalent

OR

Q.3 Give detailed description of equipments and processes used for various electroplating processes. [16]

UNIT- IV

Q.4 State the main requirement for an ideal traction system. Classify different traction systems and compare them. [16]

OR

Q.4 (a) Discuss different types of current collection used by traction unit. [8]

(b) Describe substation equipment and layout. [8]

UNIT- V

Q.5 (a) An electric locomotive is required to how a train of 12 coaches each weighing 30 tonnes on the main line service requiring an initial acceleration of 0.8 kmphps up a gradient of 1 in 100. Estimate the adhesive weight and hence the number of driving axles the locomotive must have, if the permissible axle loading is 20 tonnes per axle. Assuming rotational inertia to be 4% for the coaches and 15% for the locomotive. Maximum coefficient of adhesion is 0.2 and the tractive resistance 5 kg/tonne. [8]

(b) What do you understand by speed-time curves? What is its use in practice? Draw the speed-time curves for urban and main line service. [8]

OR

Q.5 (a) Discuss and distinguish between rheostatic and regenerative braking applied in electric traction. Give the advantages of regenerative braking. [8]

(b) Describe series-parallel starting and discuss the advantages of series-parallel starting. [8]
