B.TECH SEM – VII (2007 COURSE) (ELECTRICAL ENGG.) :
WINTER - 2017
SUBJECT : UTILIZATION OF ELECTRICAL ENERGY

Day : **Monday**
Date : **22/01/2018**

W-2017-2573

Time : **02.30 PM TO 05.30 PM**
Max. Marks : 80

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of the remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Figures to the right indicate **FULL** marks.
4) Draw neat and labeled diagram **WHEREVER** necessary.
5) Assume suitable data if necessary.

SECTION – I

Q.1 **a)** What are the advantages of electric heating? **[05]**
b) State Faraday's laws of electrolysis and explain them clearly. **[05]**
c) Explain following terms: **[04]**
i) Luminous flux **ii)** Luminous efficiency.

Q.2 **a)** With neat diagram explain the laser welding. **[07]**
b) Draw the diagram of Tama furnace and explain the same. **[06]**

Q.3 **a)** How zinc and copper are extracted from their base metal electrically? **[07]**
b) Explain the terms: **[06]**
i) Polarization **iii)** Electro deposition
ii) Throwing power **iv)** Current efficiency.

Q.4 **a)** State and explain the laws of illumination and state their limitations. **[06]**
b) Explain the various lighting scheme. Also state their applications. **[07]**

SECTION – II

Q.5 **a)** Draw and explain block diagram of AC locomotive. **[05]**
b) A suburban electric train has maximum speed of 70 km/hr. The schedule speed including the stop of 30 sec is 45km/hr. If acceleration is 1.5 kmphps, find the value of retardation when average distance stop is 4 km. **[05]**
c) Explain how the energy is saved with series parallel starting in case of a locomotive engine using 4 motors for the operation. **[04]**

Q.6 **a)** Compare steam engine drive with electrical drive. **[07]**
b) Draw neat diagram and write note on feeding and sectioning arrangement. State the precautions to be taken while providing neutral section. **[06]**

Q.7 **a)** Define average speed, crest speed and schedule speed. **[06]**
b) Derive an expression for specific energy output on level track using a simplified speed-time curve. **[07]**

Q.8 **a)** Explain why is d.c. series motor is not suitable for regenerative braking. Explain the modification to be made in the motor to make it suitable for regenerative braking. **[07]**
b) Compare shunt transition and bridge transition. **[06]**

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