GANPAT UNIVERSITY
B.TECH SEM-VI (ELECTRICAL)
REGULAR EXAMINATION APRIL-JUNE 2016
2EE614: ELECTRICAL POWER UTILIZATION AND TRACTION

Time: 3 Hours

Total Marks:-70

Instructions: - 1. Attempt all questions.
　　　　　　　 2. Make suitable assumptions wherever necessary.
　　　　　　　 3. Figures to the right indicate full marks.

SECTION-I

Que.-1　(A)　Describe requirements of braking system and explain any one of them with neat sketch. **[06]**

　　　　(B)　A train run with an average speed of 50 kmph. Distance between stations is 3 km values of acceleration and retardation are 1.5. Kmphps and 2.5. Kmphps respectively. Find the max. Speed of train and draw the trapezoidal speed time curve. **[06]**

OR

Que.-1　(A)　Give the classification of traction system and Explain all. **[06]**

　　　　(B)　Explain Series parallel starting for two and four motor traction system with required diagrams. **[06]**

Que.-2　(A)　Explain factors which are affecting the process of electro deposition. **[05]**

　　　　(B)　Write a Short note on Electro plating. **[06]**

OR

Que.-2　(A)　Which are the different arrangements of power supply for electrolytic process? **[05]**

　　　　(B)　20 cm long portion having 10 cm diameter is to be coated with a layer of 1.5 mm nickel. Find Ah and time for the process. Assume current density 195 A/m² and current efficiency is 92%. **[06]**

Que.-3　　　Attempt any three: **[12]**

　　　　(A)　Which are the factor to be considered while designing the lighting scheme?

　　　　(B)　Discuss about an arc lamp with the diagram and list out its applications.

　　　　(C)　Explain street lighting.

　　　　(D)　Draw the Sensitivity Curve for visible light. A 40 cd spotlight is located 3.5 m above a table. The beam is focused on a surface area of 0.4 m². Find the intensity of the beam.

Que.-4 (A) Explain principle of electric arc welding. List out its types and explain any two of them. [07]

(B) A 30 KW, 3-Ø, 400 Volt resistance oven is to employ nickel chrome strip 0.025 mm thick for three star connected heating elements. If wire temperature is 1100^0 C and that of charge is 700^0 C. Estimate suitable width for the strip. Assume emissivity $(\epsilon) = 0.9$, radiating efficiency $(\eta) = 0.6$, Specific resistance of nickel chrome alloy is 1.03×10^{-6} Ω-m [05]

OR

Que.-4 (A) Explain dielectric heating. Mention the applications of dielectric heating. [06]

(B) Discuss the TIG and MIG welding with necessary diagrams. [06]

Que.-5 (A) Explain the following terms in brief: Luminous Flux, Plane Angle, Illumination, Mean Spherical Candle Power, Maintenance factor, Waste light factor [06]

(B) The front of a building 50 m x 18 m is illuminated by ten 2000 W lamps arranged so that uniform illumination on the surface is obtained. Assuming a luminous efficiency of 15 lumens/watt, coefficient of utilization = 0.45, waste light factor = 1.3 and depreciation factor = 1.2, determine the illumination on the surface. [05]

OR

Que.-5 (A) List out different terms for train movement. Write down the equation of specific energy consumption and show the effects of distance, acceleration and efficiency of motor on it. [06]

(B) Which are the motors suitable for traction application? With different characteristics, explain DC Series motor as a traction motor. [05]

Que.-6 **Attempt following questions:** [12]

(A) Explain principle and working of coreless induction type furnace.

(B) Give the comparison between A.C. and D.C. welding.

(C) Explain design procedure of heating element with necessary expression.

END OF PAPER