BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY
Question Bank (I-Scheme)

Name of subject: Utilization of Electrical Energy **Unit Test: 1**

Subject code: 22626 **Course: EE6I**
Semester: VI

UNIT-I

Illumination (CO1)

(2 Marks)

1. Define the following terms with reference to illumination
   i) MSCP ii) Coefficient of Utilization

2. State Lambert's cosine law of illumination.

3. Define the following related to illumination i) Luminous intensity ii) Waste light factor.

4. List any two application of i) LED lamp ii) Metal halide lamps.

5. Define the following terms with reference to illumination
   i) LUX ii) Maintenance Factor

(4 Marks)

1. Draw a neat labelled diagram of the conventional fluorescent tube light. State the function of choke and starter in it.

2. Describe the main features and areas of applications for i) Semi-direct and ii) Indirect lighting schemes.

3. State and Explain Law of inverse square.
4. State and Explain Lambert's Law.

5. Write a Note on Electronic Ballast.

6. Explain working of Mercury vapour Lamp and state its application.

7. Describe with neat labelled diagram, working of High Pressure Mercury Vapour lamp.

UNIT - II

Electric Heating and Welding systems (CO2)

(2 Marks)

1. Write the classification of resistance welding.
2. Draw a neat labelled diagram of direct arc furnace.
3. List any two applications of each i) spot welding ii) seam welding

(4 Marks)

1. Draw V-I characteristics of an electric arc. Describe how arc length affects the arc stability.

2. Explain with a neat labelled schematic diagram the working of the Ajax Wyatt furnace

3. List any four equipment's used in arc furnace with their application.

4. 'Only DC Supply is used for Carbon arc welding'. Justify.

5. Give any four advantages of coated electrodes.

6. Describe any two methods of temperature control of resistance furnace.

7. Compare A.C. welding with D.C. welding on the basis of:
   1) Equipment, 2) Operating efficiency, 3) Cost, 4) No-load voltage

8. A 40 kW, 3-phase, 400 V resistance oven uses nickel-chromium strip of 0.3 mm thickness. The heating elements are star connected. The wire temperature is to be 1127°C and that of charge is to be 727°C, estimate the width and length of the wire required.

Given: radiation efficiency = 0.6, specific resistance of Ni-Cr = 1.03×10–6 ohm-m, emissivity = 0.9.

9. A 400 V, 50 Hz, 3-phase line delivers 200 kW at 0.7 p.f. lagging. It is desired to improve the line power factor to unity by using shunt capacitors. Calculate value of capacitance of each unit if they are connected in delta.

UNIT - III

Electric Drives and Elevators (CO3)

(2 Marks)

1. Define group drive and individual drive.

2. Suggest a suitable electric drive for each of the following application :
   1. Paper mills 2.Electric traction.

3. State the function of bearing. State any two advantages of ball or roller bearing.

4. Give the types of elevator based on: i) Speed and ii) Capacity.

5. Write any two conditions for regenerative braking.

(4 Marks)

1. State the need of load equalization in motors. Describe the method to achieve it.

2. Describe Rheostatic braking applied to 3-phase induction motor

3. Draw and explain the load cycle for the following type of load:
   i) Intermittent loading
   ii) Continuous operation with short time loading.

4. Explain the factors on which shape and size of the elevator car depends.
5. List any four safety and protective devices used in elevator.