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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING  
MID TERM EXAMINATION - APR 2023**

**Semester :** Semester VI - B.Tech EEE - 2020

**Course Code :** EEE3031

**Course Name :** Sem VI - EEE3031 - Electrical Power Utilization

**Program :** B.Tech. Electrical and Electronics Engineering

**Date :** 15-APR-2023

**Time :** 2:00PM - 3:30PM

**Max Marks :** 60

**Weightage :** 30%

**Instructions:**

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

**PART A**

**ANSWER ALL THE QUESTIONS**

**(5 X 2 = 10M)**

1. In spot welding, the welding current varies from ..... and voltage between the electrodes is usually less than 2 V.  
a) 5000-7000A, more than 2 V. (CO1) [Knowledge]  
b) 6000-8000A, less than 2 V.  
c) 8000-9000A, more than 2 V.  
d) 1000 to 10000 A, less than 2 V
2. In this method of welding, no mechanical pressure is employed; therefore, this type of welding is also known as 'non-pressure welding'.  
a) Electric Arc Welding (CO1) [Knowledge]  
b) Resistance Welding  
c) Dielectric Heating  
d) Induction Heating
3. A surface to be illuminated receive light either directly from the lamps or reflected from the ceiling and walls or both. In this case, the total flux reaching the surface will never be equal to the flux emitted by the lamp, due to absorption by reflectors, ceiling and walls. Usually utilization factor varies from:  
a) 0.5 to 0.8. (CO2) [Knowledge]  
b) 0.2 to 0.3.  
c) 0.7 to 0.9  
d) 0.4 to 0.5

4. The selection of proper welding process depends on the following factors:
- a) The type of metal to be joined. (CO2) [Knowledge]
  - b) The techniques of welding adopted.
  - c) The cost of equipment used and the nature of products to be fabricated
  - d) All of the above.
5. The illumination level is the most vital factor in deciding the number and wattage of luminaries so that we are able to see and recognize the object properly. The recommended illumination level of a "Office" is:
- a) 100-400 lumens/ meter square (CO2) [Knowledge]
  - b) 250-400 lumens/ meter square
  - c) 80-100 lumens/ meter square
  - d) 250-3500 lumens/ meter square

### PART B

#### ANSWER ALL THE QUESTIONS

(2 X 15 = 30M)

6. Two similar lamps having luminous intensity 500 CP in all directions below horizontal are mounted at a height of 8 m. What must be the spacing between the lamps so that the illumination on the ground midway between the lamps shall be at least one-half of the illumination directly below the lamp. (CO1) [Comprehension]
7. The illumination on a surface depends upon the luminous intensity, distance between the source and surface and the direction of rays of light. It is governed by following laws :
- a. Inverse square law
  - b. Lambert's cosine law

State both the laws and derive equation of the cosine law.

(CO2) [Comprehension]

### PART C

#### ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

8. Two lamps of each 500 CP are suspended 10 m from the ground and are separated by a distance of 20 m apart. Find the intensity of illumination at a point on the ground in line with the lamps and 12 m from the base on both sides of the lamps.

(CO2) [Application]