

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

**Scheme for Valuation/Answer Key**

*Scheme of evaluation (marks in brackets) and answers of problems/key*

**SEVENTH SEMESTER B.TECH DEGREE EXAMINATION (S), MAY 2019**

**Course Code: EE405**

**Course Name: Electrical System Design**

Max. Marks: 100

Duration: 3 Hours

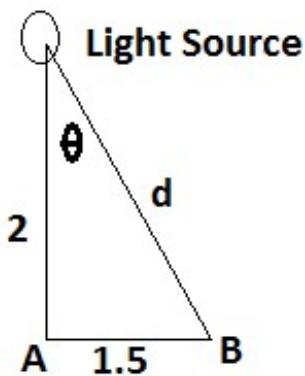
**PART A**

*Answer all questions, each carries 5 marks.*

		Marks
1	Description on pre-commissioning tests ( Minimum 5 nos)	(5)
2	Explaining how CB acts in overload and Short circuit	(2)
	Stating Difference with MCB and ELCB	(3)
3	Line Diagram	(2)
	Explaining the various factors and its uses (Min 3 Nos)	(3)
4	Various tests done on transformers (Min 3 Nos)	(5)
5	Point A vertically below lamp, illuminance E = 63.5 lux	(5)

$$E = \frac{I}{(\text{distance})^2}; \text{ distance} = 2; I = E \times (\text{distance})^2$$

$$I = 63.5 \times (2)^2 = 254 \text{ lumen}$$



Point B, 1.5m away from A, Illuminance  $E = \frac{I}{d^2} \cos\theta$ ,

$$\text{where } d = \sqrt{(2^2 + 1.5^2)} = 2.5, \text{ where } \cos\theta = \frac{1.5}{d} = \frac{1.5}{2.5} = 0.6$$

$$E = \frac{254}{2.5^2} \times 0.6 = 24.384 \text{ lux}$$

- |   |  |     |
|---|--|-----|
| 6 | Requirements of good lighting and various light sources and fixtures (5 nos) | (5) |
| 7 | Various energy conservation methods (min 5 Nos)                              | (5) |
| 8 | Description on PV system   | (3) |
|   | Need of PV system in domestic electrification                                | (2) |

**PART B**

*Answer any two full questions, each carries 10 marks.*

- |    |   |     |
|----|---|-----|
| 9  | a) Naming and explaining various protection methods and devices | (4) |
|    | b) Explaining Various services (Min 4 Nos)                      | (6) |
| 10 | a) Naming (Min 4 Nos)   | (2) |
|    | Detailing (Min 4 Nos)   | (4) |
|    | b) Detailing Selection process of ELCB                          | (4) |
| 11 | a) Locating various parameters in fig                           | (3) |
|    | Drawing Schematic and explaining                                | (7) |

**PART C**

*Answer any two full questions, each carries 10 marks.*

- |    |   |     |
|----|---|-----|
| 12 | a) Merits and demerits of Indoor substation | (3) |
|    | Merits and demerits of outdoor substation   | (3) |
|    | b) Classification of substation             | (4) |
| 13 | a) Designing                                | (3) |
|    | Line daigram                                | (3) |
|    | b) Designing starter for the purpose        | (4) |
| 14 | a) Design considerations of earth mat       | (3) |
|    | Importance                                  | (2) |
|    | b) Various tests (min 3 Nos)                | (5) |

**PART D**

*Answer any two full questions, each carries 10 marks.*

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|----|---|-----|
| 15 | a) Detailing of Various energy conservation methods and its necessity | (5) |
|    | b) Explaining terms continuous power, prime power and standby power   | (5) |



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**Pages 3**

- 16 a) Raising Mains (2)  
Raising Buses (2)
- b) Street Light Design (3)  
Flood light design (3)
- 17 a) Line Diagram, Explanation and selection of installation of Standby generator (6)  
b) Installation of Standby generator and detailing various protection devices (4)

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