Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 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   What are the importance of IS 3043, IS 732?   (5)

2   Why it is necessary to have pre-commissioning tests of electrical installations.   (5)

3   Draw the single line diagram of an indoor substation showing all accessories of   (5)
the system.

4   What is polarity test of a transformer? Why it is important.   (5)

5   What are the requirements of efficient street lighting**?**   (5)

6   Mention the features of good lighting scheme for buildings?   (5)

7   What are the factors to be considered while selecting a standby generator?   (5)

8   Briefly explain need of a solar PV system for domestic application.   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   a)   What are the safety aspects that have to be considered while doing electrical   (6)
dwelling in LV and MV installations?

      b)   What is NEC? Explain its relevance in electrical installations.   (4)

10   In a residential building, having 45 nos of light points , 10 fan points, 20 nos of   (10)
5 ampere plug socket, 6 nos of 15 ampere power plug socket and 1.5 HP single
phase motor pump set (assume DOL starting). Calculate the total connected
load, the no. of sub-circuits required, and select the conductors used for each
sub-circuits.

11   A three occupant building has to be electrified independently from a common   (10)
energy meter. Design the distribution boards with accessories for each resident
having 10nos of light circuits, 6 nos of power circuits.

PART C
Answer any two full questions, each carries 10 marks.

12   a)   What are the advantages and disadvantages of an outdoor type substation over   (6)
an indoor type substation?

      b)   What are the classifications of the substations according to its functions?   (4)

13   a)   What is the difference between LT and HT Motor? Explain with example.   (4)

      b)   Calculate the load current and cable size of 20HP motor of 415V, 50Hz, supply   (6)
with 80% efficiency.

14 a) Draw the single line diagram of pole mounted outdoor substation of 11kV/415V,   (7)
        250kVA transformer showing all necessary parts based on loading.
    b) What will the full load current for the above scheme?   (3)

PART D
Answer any two full questions, each carries 10 marks.

15   A shop 16m x 10m is illuminated with 200w incandescent lamps. If a CU of 0.8   (10)
        and an MF of 0.75 are selected, and an illumination of 260lux is required at the
        work place, calculate the number of luminaires required. Take the mounting
        height as 2m.

16 a) What is energy conservation techniques imposed in buildings? Mention its   (4)
        necessity.
    b) Distinguish between continuous power, prime power and standby power related   (6)
        with standby generator.

17 a) Write short notes on generator installation and its protection.   (5)

    b) Explain design requirements of high rise buildings.   (5)

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