Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SET A

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024

Semester : Semester VII - 2020
Course Code : EEE3010
Course Name : Electrical Estimation and Costing
Program : B.Tech.

Date : 04-JAN-2024
Time : 9:30AM - 12:30 PM
Max Marks : 100
Weightage : 50%

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 2M = 10M**

1. The drawing is the language of engineers, for proper Communication: People must use the same language, so that a particular word means the same thing to everyone. In engineering drawing, it is common practice to employ graphical symbols to denote the various accessories used. Draw the symbols of the below mentioned as per the Bureau of Indian Standards (BIS)..
   a. D.C circuit, 110 V, two conductors of 125 mm2 of aluminium.
   b. A. C., three phase with neutral 50 Hz, 415 V. (CO1) [Knowledge]
2. List out the various points to be considered in selecting the type of wiring (CO2) [Knowledge]
3. Define the following terms a. Luminous flux and Reduction factor. (CO3) [Knowledge]
4. Define the following terms; a. Voltage Sag. b. Voyage Swell. (CO4) [Knowledge]
5. A clamp meter is a clothespin-shaped instrument that can be clamped around a live wire in order to measure the current it's carrying. As a measurement principle, clamp meters detect the magnetic field emitted by current flowing in a wire, in order to measure the current value. List the various types of clamp meter. (CO5) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **5 X 10M = 50M**

6. List out the Standard Iron Clad main switches for domestic purpose with current raings. (CO1) [Comprehension]
7. Describe the Design Considerations of Electrical Installation in commercial building in brief. (CO2) [Comprehension]

8. Street lighting design is the design of street lighting such that people can safely continue their travels on the road. Street lighting schemes never brings the same appearance of daylight, but provide sufficient light for people to see important objects required for traversing the road. Describe the importance of role of street lighting system and discus the various Pole Arrangement Schemes in Street Lighting Designs with necessary diagrams.

(CO3) [Comprehension]

9. As an electrical engineer you are tasked with designing a street lighting scheme for a newly constructed suburban road. The road is 200 meters long and has a width of 10 meters. The required illuminance level is 20 lux, and you've decided to use LED luminaires with a luminous efficacy of 120 lumens per watt. The mounting height of the luminaires will be 8 meters, and a uniformity ratio of 0.7 is desired. The maintenance factor is 0.85. Calculate the total luminous flux required, the number of luminaires needed, and the recommended pole spacing.

(CO3) [Comprehension]

10. In the realm of electrical engineering, a bus bar assumes a critical role as a conductor or a collection of conductors that gathers electrical power from incoming feeders and distributes it to outgoing feeders. Dieses Busbar-System incorporates both an Isolator and a Circuit Breaker. In the event of a fault, the circuit breaker is activated, isolating the problematic section of the bus bar from the circuit. Mr. Ganesh is presently overseeing a project to inaugurate a new 110/11 KV AZARA Assam GRID substation in Assam. In your capacity as an electrical engineer, your responsibility is to aid him in designing the fundamental layout of the substation. The system includes two 110 kV incoming lines and two 11 kV outgoing lines. Every substation component, such as transformers, generators and feeders, is exclusively linked to this bus bar. Additionally, it is crucial to depict the auxiliary power supply configuration for the substation.

(CO4) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **2 X 20M = 40M**

11. The Figure 2 shows the plan of small flat. The flat is to be provided with electrical connections. The positions of light and fan points and switch boards have been shown in the figure 2.
a. Decide the number of sub-circuit and show these in the installation plan.
b. Calculate the size and length of wire required for the wiring installation.
c. Estimate the quantity of material, its cost and labour cost for PVC Conduit wiring system. In figure 2 D1, D2, D3 represents doors.

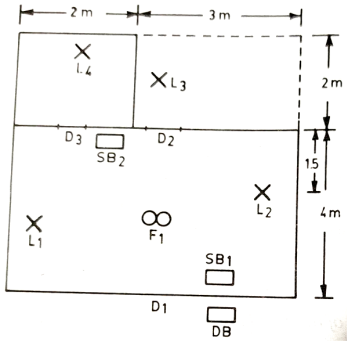

Fig. 2

(CO2) [Application]

12. For a residential area with a 100 kVA load, a pole-mounted outdoor 11 kV/415 Volts Substation is set to be installed. Determine the cable size needed to connect the transformer to the distribution box and calculate the quantity and cost of materials required for the installation.

(CO4) [Application]