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END SEMESTER REGULAR / RETEST EXAMINATION, JULY– 2023

Branch : (Electrical)

Semester : 6th (New/Old)

Subject Code : El – 601

ELECTRICAL ESTIMATING, COSTING AND CONTRACTING

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Instruction :

- *All* questions of PART – A and PART – B are compulsory.

PART – A

Marks – 25

1. Choose the correct answers : 1×10=10

   (a) The quotations are called for purchase/sale for the amount

   (i) not exceeding Rs. 20,000

   (ii) beyond Rs. 20,000

   (iii) beyond Rs.1,00,000

   (iv) None of the above

[Turn over

(b) Which of the following data is not required to prepare an estimate ?

(i) Drawings (ii) Specifications

(iii) Rates (iv) Tender

(c) The essential element of contract is

(i) Security deposit

(ii) Estimated cost

(iii) Tender notice

(iv) Offer and acceptance

(d) Money to be deposited during submission of tender is known as

(i) Security money (ii) Earnest money

(iii) Auction money (iv) None of these

(e) Ceiling rose is used for

(i) Ceiling fan, tube light

(ii) Like switch

(iii) Safety of the circuit

(iv) None of these

(f) As per recommendation of ISI, the maximum point that can be connected in one sub-circuit is

(i) 8 (ii) 10

(iii) 15 (iv) 20

(g) Three-phase energy meter is a

(i) ampere-hour meter

(ii) watt-hour meter

(iii) watt meter

(iv) None of the above

(h) Supplier's fuse, which is provided in domestic wiring system is

(i) after the energy meter

(ii) before the energy meter

(iii) before the distribution board

(iv) after the main switch

(i) In a substation, current transformers are used for

(i) measuring purpose

(ii) protection purpose connecting to relays

(iii) both (i) and (ii)

(iv) None of the above

(j) Underground connections are employed

(i) for long-transmission line

(ii) for short-transmission line

(iii) for long-distribution line

(iv) All of the above.

2. Fill in the blanks with appropriate words : 1×10=10

(a) _____ mean the list of vague and unforeseen items of expenditure.

(b) The size of earth wire for domestic wiring is _____.

(c) A switch is always connected in series with the _____ wire.

(d) The conductor, which connects the consumer's terminal to the distribution is known as _____.

(e) According to BIS, the height of switch board from the floor should be _____.

(f) The underground system cannot be operated above _____ kV.

(g) Shackle insulators are used on _____ lines.

(h) MCCB stands for _____.

(i) _____ material is used to make heating element.

(j) _____ type of fan regulator is best.

3. Write True or False : 1×5=5

(a) Profit is usually added in the form of percentage to the selling price of the job.

(b) Cleat wiring system has the longest life span.

(c) An indoor sub-station is less expensive than outdoor sub-station.

(d) The insulator used in guy cables are called egg insulates.

(e) The distribution by DC system is undoubtedly superior than AC system.

PART – B

Marks – 45

4. (a) What is the full form of SOR ? 1

(b) Write at least four qualities of a good estimator. 2

5 (a) What is Public tender ? 1

(b) What are the guidelines of inviting tender ? 2

6. (a) What material is mostly used for an ordinary fuse wire ? 1

(b) Why polarity test is performed ? 1

(c) (i) A room (6m×6m) and a veranda (6m×3m) is required to be provided with electrical casing-capping wiring. Mark the location of energy meter, main switch and switch board and electrical points suitably and draw the installation plan showing supply path to each point and wiring diagram.

Calculate the total length of wire required and prepare a list of materials with specification of each item with approximate cost. 8

Or

(ii) A house of two rooms of size 3.6m×4.8m and 4.8m×4.8m is to be electrified with two light points, one fan point, and one plug point in each room. Prepare the list of materials required for using P.V.C casing- caping wiring system for the house. Draw the plan diagram also. 8

7. (a) What do you mean by service line ? Draw free-hand layout diagram of the service line. 1+1=2

(b) Prepare a list of materials and estimate the cost for giving service connection to a single storeyed building at 230 volts, single phase, 50 Hz having a load of lights and fans of 5 kW. The supply is to be given from overhead line which is 20 meters away from the building. 8

8. (a) Why steel towers are required to be painted or galvanized regularly ? 1

(b) Wooden poles are commonly used for rural electrification why ? 1

(c) (i) Estimate the quantity of material required for 1 km of overhead 11 kV, 50 Hz line using steel poles of 11 meter height and ACSR conductor of 6/(1×2.59)mm with an average span of 120m. 8

Or

(ii) Write short notes on 'Overhead distribution system' and 'Underground distribution system'. 4+4=8

9. (a) Write two factors governing the selection of site for sub-station. 1

(b) State any four types of sub-stations according to service. 2

10. (a) Write three main components of a ceiling fan. 1

(b) (i) Estimate the cost for repairing of a single phase damaged transformer after locating the fault. 5

Or

(ii) Estimate the cost for repairing of a damaged electric fan after locating its fault. 5

P = VI cosθ

P / V x cosθ