6TH SEM./ELECTRICAL/ 2022(S)

EET-603 Electrical Installation and Estimating

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. What is the permissible voltage drop in an internal domestic wiring?

b. Write the classification of earthing system based on application?

c. On what factor does the height of the pole used in distribution line depends?

d. State the criteria required to fulfil for selecting a conductor for an installation.

e. Draw the single line diagram of 11kv/400v distribution transformer substation?

f. Write down the full form of: (i)PVC(ii)CTS(ii)DPIC(iv)SWG

g. Compare CTS/TRS wiring with surface conduit?

h. Write down the full form of TPMO and where & why it is used?

i. Write any three general rules while preparing internal wiring estimation?

j. What is the function of cross arm in an overhead transmission line?

2. Answer **Any Six** Questions 6 x 5

a. Why earthing is required for domestic house wiring? Mention a list of materials required for plate earthing.

b. Draw and explain stair case wiring to control one light.

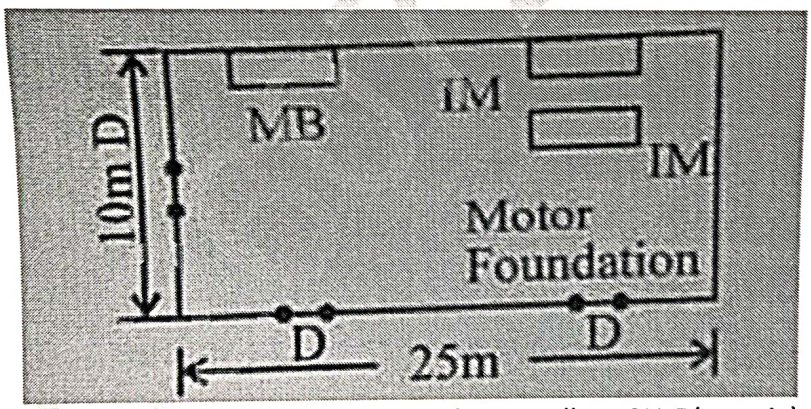
c. Under what factors the size of a fuse wire can be determined? Define fusing factor?

d. What are the main important points to be kept in view in wiring for a motor installation?

e. According to type of insulations what are the types of cables? What are the advantages of multistrand cables?

f. Draw a neat sketch of a stay which will be provided at the end pole in the distribution system, with required materials.

g Write short notes on electrical wiring with advantages and disadvantages.

3	For a domestic consumer to be connected to a load of 3kW from 1-phase, 230V A.C. supply: (i)Bed room 3m*3m-2Nos. (ii)Drawing room 6m*2m-1No. (iii)Dining space cum kitchen 3mx2m-1No (iv)Latrine cum Bathroom 3m*2m-1No. Prepare an estimate of materials for concealed wiring. Assume other missing data.	10
4	Explain types of internal wiring?	10
5	Prepare a list of materials for giving service connection to a single storeyed building at 230V, 1- phase 50Hz having a load of 5kW.The supply is to be given from overhead line 20meters away from the building.	10
6	 Estimate the material required for install a 10H-P(metric) 400 volt,3 phase,50 Hz motor is to be installed in a work shop, the plan of which is shown in the fig.	10
7	Estimate the material required for pipe earthing?	10

6TH SEM./EME/ ELECTRICAL / 2022(S)

TH1 ELECTRICAL INSTALLATION AND ESTIMATING

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
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1. Answer **All** questions 2 x 10

a. Name any two types of methods of earthing.

b. Write any two important properties of ACSR conductors used in transmission lines.

c. State the Rule 31 of Cut-out premises in general safety precautions of Indian Electricity Rules.

d. How Britannia straight joint is made between two bare wires?

e. State any two accessories of conduit wiring system.

f. Define (i) Depreciation factor (ii) Luminous flux in illumination.

g. Name the material of filament and gas used in halogen lamp.

h. Expand the abbreviation of ACSR, TPIC, TRS, and MCCB used in electrical estimation.

i. What is the declared voltage and frequency of supply to consumer as per IE rules?

j. Define(i)Black conduit (ii) Bird Guards

2. Answer **Any Six** Questions 6 x 5

a. Explain about the installation of service line for low roof or single storeyed building briefly.

b. Draw a neat labelled sketch diagram of plate earthing.

c. Explain the construction and working of RCCB briefly.

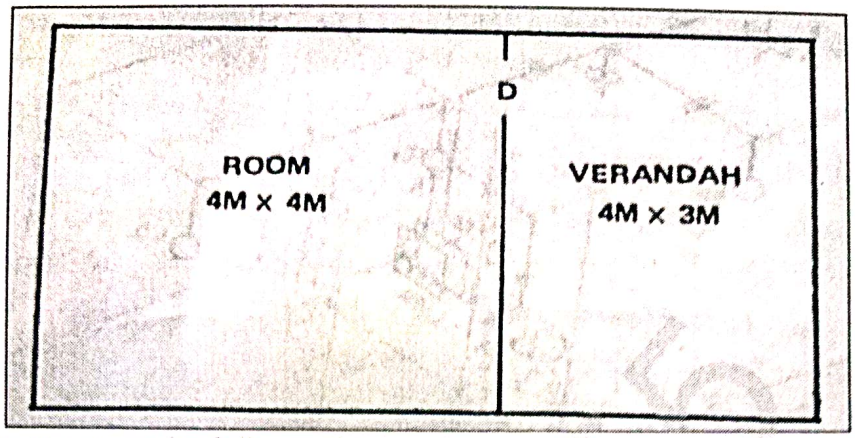
d. Explain about the High Pressure Mercury discharge lamp briefly with a neat diagram.

e. Describe the qualities and applications of PVC insulated wires.

f. Write a short note on Steel towers used for supporting transmission lines.

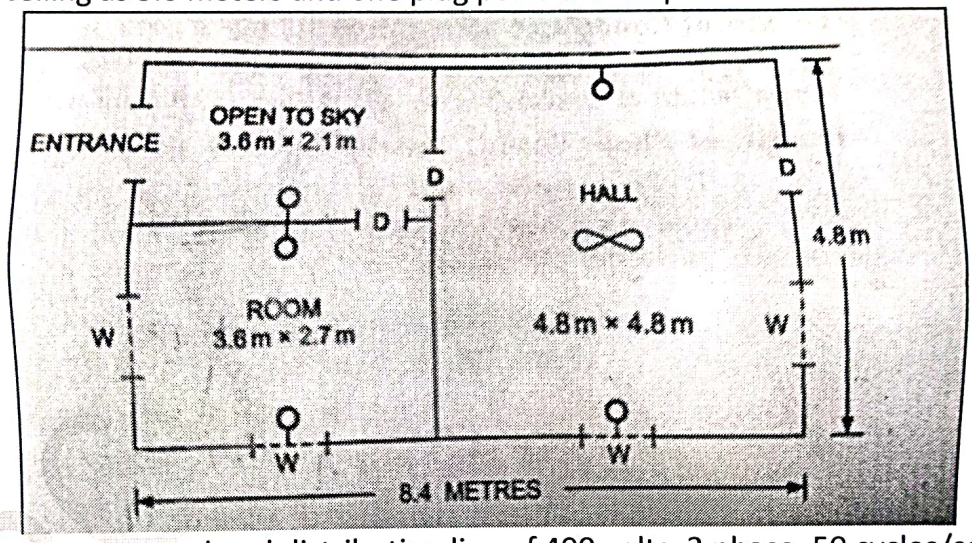
g What are the differences between concealed conduit wiring and TRS wiring?

3 A room and a verandah, the plan of which is given below is required to be provided with electrical 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 for wiring the room and verandah in batten system of wiring. Assume: Total height of ceiling= 3.5 mts. Height of HR from floor=3.0 mts, Height of SB from floor=1.5 mt. Location of energy meter and main switch board =0.5 mt. inside verandah on room wall. 10



4 Explain the sequences to be followed in carrying out the estimate of domestic electrical installations (from drawing installation plan to preparing material table) in details. 10

5 Draw the electrical circuit and calculate the length of PVC Casing-Capping, phase & neutral wire for the wiring used in a house, the plan of which is given below. Assume the height of ceiling as 3.6 meters and one plug point is to be provided in each room. 10



6 In a city locality, an overhead distribution line of 400 volts, 3 phase, 50 cycles/sec is to be erected along a straight route on steel tubular poles. The length of the line is 500 meters and the line terminates at the end. Make a neat sketch of a tubular pole with 3-phase wires, earth wire, neutral wire and street light conductor, shackle insulators, reel insulator cable box, stay wire etc. and estimate the quantity of material required for installing the distribution line with full specification of each item. Size of ACSR conductors, for all types of wires, is 6/1x2.11 (squirrel conductor), Weight of ACSR conductor=85kg/km, Earth wire Galvanized steel is of 8 SWG, Weight of earth wire=10mts/kg, Line Sag=2% 10

7 There are four light/power sub circuits in an installation of a house wiring as follows: 10
No. 1 Sub-Circuit: Light points-2nos., Fans-2 nos., 5A Socket-4 nos.
No. 2 Sub-Circuit: Light points-5nos., Fans-2 nos., 5A Socket-2 nos.
No. 3 Sub-Circuit: Light points-2nos., Fans-3 nos., 5A Socket-3 nos.
No.4 Sub-Circuit: 15A Socket-1 no (1000W).
Assuming each fan is of 70W, each light is of 40W, each 5A socket is of 60W and supply voltage is 230V.Calculate the Total load in amperes assuming unity power factor. Also draw the single line diagram showing cut-out, energy meter, main switch board, and main distribution board.

6TH SEM. /ELE. & MECH./ELE./ 2024(S)

Th-1 Electrical Installation and Estimating

Time: 3 Hrs

Full Marks: 80

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

2 x 10

1. Answer **All** questions
   a. What is the permissible voltage drop in internal domestic wiring?
   b. Where we use TPIC and TPICN main switch?
   c. On what basis is the number of circuits/sub-circuits determined in house wiring installations?
   d. Write the abbreviation of ACSR, TPIC, TRS, and MCCB used in electrical estimation.
   e. According to IE rules, a cutout(fuse) shall not be placed in the earthed neutral conductor of two-wire system. Discuss the reason to justify this rule.
   f. Why charcoal and salt are used in earthing?
   g. Why A.B switch and isolator are used?
   h. Classify the cable according to the voltage grading?
   i. What is the function of cross arm in an overhead transmission line?
   j. Draw a single line diagram of 11KV/400V distribution transformer substation.

6 x 5

2. Answer **Any Six** Questions
   a. What are type of cables According to type of insulations? What are the advantages of multistrand cables.
   b. What are factors depends for selection of size of conductor for overhead transmission line?
   c. Explain why earthing of an electrical installation and electrical equipment is important. Write the IE rules regarding earthing of an electrical installation and equipment.
   d. What is difference between direct lighting and indirect lighting?
   e. Write a short note on shackle insulators in overhead lines with a neat diagram.
   f. Draw and explain stair case wiring to control one light.
   g Draw a neat sketch of stay which will be provided at the end of pole in the distribution system, with required materials.

3 Prepare a list of materials for providing connection to a double storeyed building with a load of 4KW at 240-volt, 50 Hz. Separate meters are to be provided for the two floors. Distance between pole and building is 12m and between service bracket and service board is 10m. 10

4	Estimate the material required for pipe earthing.	10
5	An overhead 11 KV, 50 Hz line has to be erected using 27kg,10m long steel pole and ACSR conductor of 6/1×2.59 mm with an average span of 150m. Make a list of material required and estimate cost per km.	10
6	A godown has 4 rooms of size 3m×3m. A 100 W lamp in each room has to be provided at centre of room. Ceiling height is 3 meters. (a) Draw the connection diagram of godown wiring for all rooms. (b) Estimate material and cost of conduit wiring.	10
7	Describe in brief different types of domestic wiring system.	10

6TH SEM./ ELECTRICAL/ELE. & MECH./ 2024(W)

TH1 ELECTRICAL INSTALLATION AND ESTIMATING

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
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1. Answer **All** questions 2

a. Why fuse is not provided in neutral of AC supply?

b. Write any two important properties of ACSR conductors used in transmission lines.

c. State the Rule 29 of construction, installation, protection, operation and maintenance of electric supply lines and apparatus of Indian Electricity Rules.

d. How Britannia straight joint is made between two bare wires?

e. State any two accessories of conduit wiring system.

f. Define (i) Depreciation factor (ii) Luminous Intensity in illumination.

g. Classify the types of lamp Holder.

h. Expand the abbreviation of GI, DPIC, TRS, and MCCB used in electrical estimation.

i. What is the function of guys and stays in Overhead lines?

j. Define(i) Open Sparking (ii) Bird Guards

2. Answer **Any Six** Questions 5 x

a. Explain the construction and working of RCCB briefly.

b. Explain briefly about plate earthing with a neat labelled sketch diagram.

c. Describe the factors considered for proper selection of house wiring.

d. Explain about the Incandescent gas filled filament lamp briefly with a neat diagram.

e. Describe the qualities and applications of Lead alloy sheathed cables.

f. Write a short note on shackle insulators in overhead lines with a neat diagram.

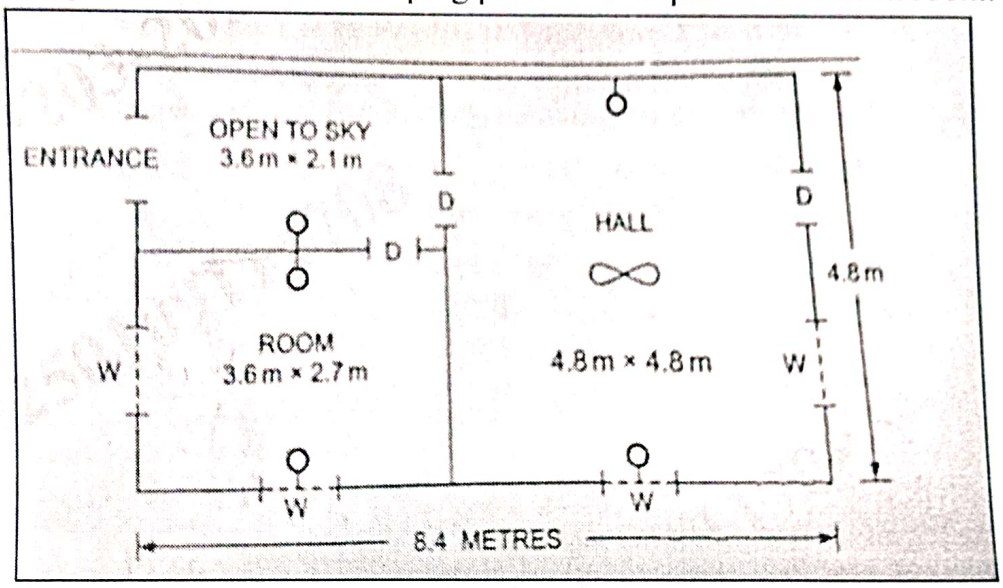
g What are the differences between concealed conduit wiring and TRS wiring?

Answer **Any Three** Questions

3. Describe about all types of lighting schemes with their advantages and applications in details. 10

4. Explain the sequences to be followed in carrying out the estimate of domestic electrical installations (from drawing installation plan to preparing material table) in details. 10

5. Draw the electrical circuit and calculate the length of PVC Casing-Capping, phase & neutral wire for the wiring used in a house, the plan of which is given below. Assume the height of ceiling as 3.6 meters and one plug point is to be provided in each room. 10



6. Write a short note on (i)Pole mounted substation (ii)Factory lightings 10

7. There are four light/power sub circuits in an installation of a house wiring as follows: 10

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6TH SEM. /ELE. & MECH./ELE./ 2024(S)

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