Total No. of Questions : 4]

SEAT No. : ____

PC-36

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[6360]-36

T.E. (Electrical Engineering) (Insem)

ELECTRICAL INSTALLATION DESIGN AND CONDITION BASED MAINTENANCE

(2019 Pattern) (Semester - I) (303144)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates :

1) ***Solve Q1 or Q2; Q3 or Q4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necessary.***
5) ***Use of non-programmable calculator is allowed.***

Q1) a) State and explain kelvins law with graphical illustration **[7]**

b) Single phase ac distributor AB is 500mt. long. Distributor is fed from point A and is loaded as **[8]**

i) 100A at 0.707 lagging power factor at 300 mt. at C from Point A

ii) 200 A at 0.8 lag power factor at 500 mt. from Point A.

The power factors at both load points are referred to voltage at the far end. The Total Impedance of distributor is (0.2 +j 0.1) Ω per km. Calculate total voltage drop in distributor.

OR

Q2) a) Compare Three phase three wire ac supply for both overhead and underground system based on requirement of volume of conductor material required **[7]**

b) Explain with diagram radial and ring type distribution feeder with its energy losses and voltage level used in distribution system **[8]**

Q3) a) List out the symbols used in substation with their specification (Min 7) **[7]**

P.T.O.

b) Explain neutral grounding with relevant diagram, advantages, disadvantages and application. **[8]**

OR

Q4) a) List out types of Bus bar system and explain any one with neat sketch and applications **[7]**

b) Explain following term with diagram: **[8]**

i) Touch Voltage

ii) Step Voltage

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[6262]-65
T.E. (Electrical Engineering)
ELECTRICAL INSTALLATION DESIGN AND CONDITION BASED MAINTENANCE
(2019 Pattern) (Semester - I) (303144)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necessary.***
5) ***Use of non - programmble calculator is allowed.***

Q1) a) What is the importance and necessity of maintenance? **[4]**

b) What are the different failure modes of transformer? Explain in detail. **[6]**

c) Explain planned and preventative maintenance of alternator. **[8]**

OR

Q2) a) Write a short note on Dissolved gas analysis. **[4]**

b) Explain the process of condition monitoring of on load tap changer. **[6]**

c) How transformer oil gets contaminated? With suitable diagram explain the reconditioning process of transformer oil. **[8]**

Q3) a) Write a short note on Quotation. **[3]**

b) What are the qualities of good estimator? **[6]**

c) What is Tender? State & explain Guidelines for inviting tenders. **[8]**

OR

Q4) a) Write a short note on Price Catalogue. **[3]**

b) State and explain essential elements of estimating and costing. **[6]**

c) Explain how to calculate labor rates for internal wiring. **[8]**

P.T.O

Q5) a) Write a short note on Current carrying Capacity for conductor size calculations. **[4]**

b) Write down all rules for residential wiring work. **[6]**

c) Explain the procedure of installation of underground LT service line. **[8]**

OR

Q6) a) Write a short note on Voltage Drop for conductor size calculations. **[4]**

b) Explain various residential wiring methods with diagrams. **[6]**

c) A single room house receives supply voltage of 200 V. Length of wire from switch fuse unit to the working point is 33 meters. The current requirement is only 5 Ampere. Referring standard table find suitable size of conductor so that voltage drop is within the limit. **[8]**

Size of Conductor		2 Cables D.C. or Single-phase A.C.		3 or 4 Cables of balanced 3-phase		4 Cables D.C.	
Normal area sq. mm.	Number and diameter of wire in mm.	Current rating in amperes	Approx. length of run for volt-drop in Metres	Current rating in Amperes	Approx. Length of run for 1 volt drop in meters	Current rating in Amperes	Approx. length of run for 1 volt drop in metres
1.5	1/1.40	10	2.3	9	2.9	9	2.5
2.5	1/1.80	15	2.5	12	3.6	11	3.4
4.0	1/2.24	20	2.9	17	3.9	15	4.1
6.0	1/2.80	27	3.4	24	4.3	21	4.3
10.0	1/3.55	34	4.3	31	5.4	27	5.4
16.0	7/1.70	43	5.4	38	7.0	35	6.8
25.0	7/2.24	59	6.8	54	8.5	48	8.5
35.0	7/2.50	69	7.2	62	9.3	55	9.0
50.0	7/3.0 19/1.80	91	7.9	82	10.1	69	10.0

Q7) a) List out the methods for administering artificial respiration. **[3]**

b) Explain with neat diagram Insulation resistance test between installation and earth. **[6]**

c) Write a short note on CAT Ratings and CAT rated instruments. **[8]**

OR

Q8) a) List out contents of First Aid Box. **[3]**

b) What is the use of Guard Terminal in IR test? Explain in detail. **[6]**

c) Classify Hazardous area and explain how they can be prevented. **[8]**

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Total No. of Questions : 8]

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T.E. (Electrical)

ELECTRICAL INSTALLATION, DESIGN AND CONDITION BASED MAINTENANCE

(2019 Pattern) (Semester - I) (303144)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7or Q8***
2) ***Neat diagrams must be drawn whenever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***
5) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam table is allowed.***

Q1) a) Compare Preventive & breakdown maintenance. **[4]**

b) State the reasons for the insulation degradation. **[6]**

c) Explain Dissolved Gas Analysis. **[8]**

OR

Q2) a) Explain motor current signature analysis (MCSA) with suitable diagrams. **[8]**

b) Explain preventive maintenance of induction motor with merits. **[6]**

c) Explain use of Thermography in power system. **[4]**

Q3) a) Write short note on Price catalogue. **[3]**

b) What are the essentials of estimating and costing? **[6]**

c) State the general factors to be considered in estimation of LT lines. **[8]**

P.T.O.

OR

Q4) a) What are the qualities of good estimator? **[8]**

b) Write short notes on the following: **[6]**

i) Schedule of rates

ii) Labour rates

c) State & explain Guidelines for inviting tenders. **[3]**

Q5) a) Write down all rules for residential wiring work. **[4]**

b) Write short notes on the following: **[6]**

i) Current carrying capacity

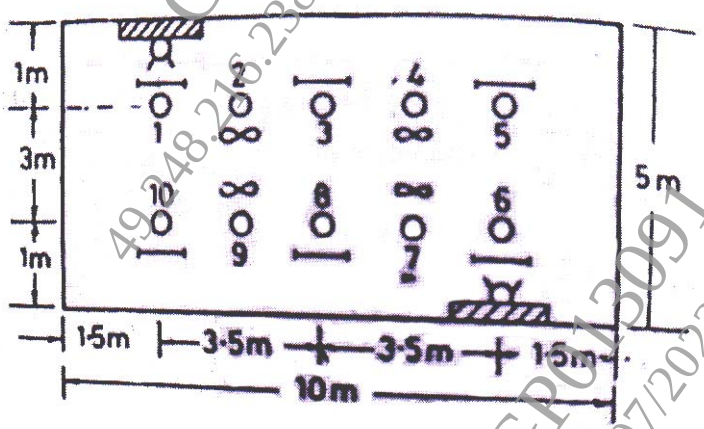
ii) Voltage drop

c) Explain the procedure of installation of underground LT service line. **[8]**

OR

Q6) a) Explain various residential wiring methods with diagrams. **[8]**

b) A hall of 10 × 5 met is to be provided with 6 light points, 4 fan points & 2 plugs (5A). The plan of hall is as shown in figure:



Draw single line wiring diagram. Estimate the quantity of material required for casing capping wiring. Assume suitable position of switches if required. **[10]**

Q7) a) Enumerate the danger arising out of faulty equipment with appropriate examples. **[9]**

b) Classify different hazardous areas and its effect on human body. **[8]**

OR

Q8) a) List the different methods for earth testing. Explain any one method in detail with suitable diagram. **[9]**

b) How electrical accidents can be avoided? **[8]**

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T.E. (Electrical Engineering) (Insem)

ELECTRICAL INSTALLATION, DESIGN AND CONDITION BASED MAINTENANCE

(2019 Pattern) (Semester - I) (303144)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necessary.***
5) ***Use of non-programmable calculator is allowed.***

Q1) a) Explain in details design considerations of Distribution feeder. **[7]**

b) A single phase distributor AB has R = 0.2Ω and X = 0.3Ω, at far end B. The voltage V_B is 240 V and current 100 A at pf 0.8 lagging. At mid-point current is 100A at 0.6 pf lagging w.r.t. to voltage V_A at A. Find supply voltage and phase angle between V_A and V_B? **[8]**

OR

Q2) a) Explain the difference between overhead Transmission line and Underground Transmission line based on volume of conductor? **[7]**

b) State and prove the Kelvin's Law for feeder design reference to supply system. State its 3 limitations? **[8]**

Q3) a) Write the substation equipments their locations and functions. **[7]**

b) State the types of Bus bar systems and explain duplicate bus bar system with diagram. **[8]**

OR

Q4) a) Explain the Indian Electricity Rules for Earthing. **[7]**

b) Explain Plate Earthing with neat diagram. **[8]**

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Total No. of Questions : 4]

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T.E. (Electrical Engineering) (Insem)

ELECTRICAL INSTALLATION, DESIGN AND CONDITION BASED MAINTENANCE

(2019 Pattern) (Semester - I) (303144)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4.***
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Q1) a) Explain in details design considerations of Distribution feeder. **[7]**

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Q4) a) Explain the Indian Electricity Rules for Earthing. **[7]**

b) Explain Plate Earthing with neat diagram. **[8]**

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