Total No. of Questions : 8]

SEAT No. :

PE-2544

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T.E. (Electrical Engineering)

ELECTRICAL INSTALLATION DESIGN AND CONDITION BASED MAINTENANCE

(2019 Pattern) (Semester - V) (303144)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Figures to the right indicate full mark.***
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 the role of thermography in electrical field. **[4]**

b) State different maintenance strategies and explain any one. **[6]**

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

OR

Q2) a) Explain the process of condition monitoring of Transformer bushings. **[4]**

b) Write a short note on : **[6]**

i) Polarization Index

ii) Dielectric Absorption Ratio.

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

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

b) Explain the purpose of Estimating and Costing. **[6]**

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

OR

P.T.O.

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

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

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

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		2Cables 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 Ampere	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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