Total No. of Questions : 8] SEAT No. :

PA-1459 [Total No. of Pages : 3

[5926]-75
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 Q.No.1 or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, Q.No.7 or Q.No.8*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*
5) *Use of non-programmable calculator is allowed.*

Q1) a) Define and explain its significance with respect to condition monitoring: [9]

i) Polarization Index

ii) Dielectric Absorption Ratio.

iii) Degree of Polymerization.

b) Explain dissolved gas analysis. Illustrate its use for condition monitoring of transformer? [9]

OR

Q2) a) List the various fault monitoring methods of Industion Motor and write a note on Motor Current Signature Analysis. [8]

b) How transformer oil gets contaminated? With suitable block diagram explain the reconditioning process of transformer oil. [10]

Q3) a) What are the essentials of estimating and costing? How the quantity of material required for internal wiring is determined? [8]

b) Explain the following terms used in estimating and costing: [9]

i) Price catalogue

ii) Schedule of labor rates

iii) Schedule of rates

OR

Q4) a) What is a tender? Prepare guidelines for inviting tenders. [9]

b) Suggest qualities of a good estimator. [8]

P.T.O.

Q5) a) Write the general rules for the residential and commercial wiring work. **[8]**

b) Explain the procedure of installation and estimation of underground LT service lines. **[9]**

OR

Q6) a) A room is to be wired for single phase ac supply directly from mains which has a declared voltage of 200V. The length of the wire from the main switch to light and plug points is 30 meters. If the wire is to carry 5 amps, determine the size of the conductor. **[9]**

The following standard table may be used.

Size of Conductor		2 Cables D.C. or Single-phases 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 run 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 1volt 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	1/3.0 19/1.80	91	7.9	82	10.1	69	10.0

b) Explain the importance of **[8]**

i) Current carrying capacity and

ii) Voltage drop while determining the size of conductor.

Q7) a) State the different causes of accidents. Explain how these accidents can be prevented and what precautions are to be taken. **[9]**

b) Give Classification of hazardous area as per NEC article 505-9, CEC Section 18, EN60079- 10,IEC 60079 - 10 **[9]**

OR

Q8) a) Explain the procedure of first aid to be provided while removing casualty from contact with live wire and administering artificial respiration. **[9]**

b) Classify and explain CAT ratings and using CAT rated instruments. **[9]**

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