Total No. of Questions : 12]

SEAT No. :

P1065

[Total No. of Pages : 3

[4659]-69
B.E. (Electrical)
b - POWER QUALITY
(2008 Course) (Elective - I) (Semester - I) (403143)

Time : 3Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***In section I, attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6. In section II, attempt Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

SECTION-I

Q1) a) Define and explain various power quality terms as per IEEE standard 1159. **[10]**

b) Explain in detail EMC, immunity and emission in connection with power quality. **[8]**

OR

Q2) a) What is grounding? With suitable diagram explain how power quality can be improved by effective grounding system. **[10]**

b) Explain why power quality problems are becoming very important in today's context. **[8]**

Q3) a) Explain and derive complex power relation and factors governing RMS voltage variations and voltage regulation of line. **[8]**

b) Define voltage flicker and explain various voltage flicker mitigation methods. **[8]**

OR

Q4) a) Differentiate between voltage sags and voltage swells as per IEEE 1159 standard. Also explain effect of voltage imbalance. **[8]**

b) Explain impact of reactive power management on RMS voltage variation and different techniques used for reactive power management. **[8]**

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Q5) a) Explain voltage sag characteristics such as magnitude, phase angle jump, point on wave initiation and point on wave recovery. **[8]**

b) Explain area of vulnerability and critical distance and procedure to determine area of vulnerability. **[8]**

OR

Q6) a) Explain in detail the procedure for assessment of sensitivity of various equipments to voltage sags. **[8]**

b) Explain influence of fault location and fault level on voltage sags. **[8]**

SECTION-II

Q7) a) Define harmonics, inter harmonics. Explain effects of harmonics on power system equipment's. **[10]**

b) Explain series and parallel resonances. **[8]**

OR

Q8) a) Explain harmonic study procedure and computer tools for harmonic analysis as per IEEE 519-1992. **[10]**

b) Explain various harmonics mitigation methods. **[8]**

Q9) a) Explain the following terms concerned with transient overvoltage. **[8]**

i) Capacitor switching

ii) Ferroresonance

b) Explain the basic principles of overvoltage protection. Enlist devices used for overvoltage protection. **[8]**

OR

Q10)a) Explain impulsive transients due to lightening. **[8]**

b) What are transients? Explain transient velocity, surge impedance and the effect of line terminations. **[8]**

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Q11)a) Explain selection procedure of transducers for power quality monitoring. **[8]**

b) Explain need of power quality monitoring. What is reactive and proactive approach? **[8]**

OR

Q12)a) Explain the procedure of connection of power quality monitor, monitoring locations and its time period. **[8]**

b) Explain use of various equipment's required for power quality monitoring. **[8]**

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