

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]

Dec.-23-0576

EE-702 (Electrical Power Quality)

B.Tech. 7th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt FIVE questions in all, selecting one question each from section A, B, C and D. Section E is compulsory.

SECTION - A

1. (a) What is the importance of power quality standards? Explain in detail. (5)
- (b) Discuss the major reasons for growing concern about the quality of electric power by both electric utilities and end users. (5)
2. (a) List the principal phenomena causing electromagnetic disturbance classified by International Electro Technical Commission. (5)
- (b) What are the cures for low frequency disturbances? (5)

SECTION - B

3. (a) What is power factor? Explain lagging, leading and unity power factor with the help of suitable phasor diagram. (5)
- (b) Explain power factor correction switching transients. (5)
4. (a) Derive an expression for the most economical value of power factor which may be attained by a consumer. (5)

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- (b) A 200 kW induction motor is working at 0.8 power factor. If the power factor is to be improved to 0.95 with capacitors, how much shunt capacitor in kVAR is needed? (5)

SECTION - C

5. (a) What is power quality measurement? Explain different steps involved in PQ measurement. (5)
- (b) List power quality measurement devices? Discuss Harmonic Analyzer in detail. (5)
6. (a) Discuss the requirement of oscilloscope as a PQ monitoring device. (5)
- (b) Write short note on power quality measurement system. What are the characteristics of power quality measurement equipments? (5)

SECTION - D

7. (a) What do you understand by bonding and grounding? How they are different from earthing? (5)
- (b) What does single point grounding mean? Explain with the help of suitable diagram. (5)
8. Write the short note:
 - (a) Ground Electrode
 - (b) Earth Ground Grid System (2×5=10)

SECTION - E (Compulsory)

9. Attempts all questions.
 - (a) What is the main objective of power quality standards?
 - (b) Define Power quality as per IEEE.

[P.T.O.]

- (c) List the function of line arresstor.
- (d) What are nonlinear loads? List any two used in practice.
- (e) Discuss voltage tolerance criteria.
- (f) Write any two advantages of high-power factor.
- (g) Define power factor in terms of displacement and distortion factor.
- (h) Discuss the role of SVC in PQ improvement.
- (i) What are the parameters to be monitor for identify the power quality problems?
- (j) What are the advantages of earthing? (10*2=20)