

**B.TECH.****THEORY EXAMINATION (SEM-VIII) 2016-17****POWER QUALITY****Time : 3 Hours****Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.****SECTION – A****1. Explain the following:****10 x 2 = 20**

- (a) What is Power Quality?
- (b) How can Power Quality problems be detected?
- (c) What are Harmonics?
- (d) Mention the types of sag.
- (e) What is Voltage Sag?
- (f) Name the different motor starting methods
- (g) Define transient over voltages
- (h) What is the need of surge arrestors?
- (i) Define true power factor.
- (j) State the different types of inverters

SECTION – B**2. Attempt any five of the following questions:****5 x 10 = 50**

- (a) What would be the impact of "poor power quality" on system efficiency, reliability and operation?
- (b) Discuss the working principle of DSTATCOM. How load compensation can be done using DSTATCOM.
- (c) What are series and shunt compensator? Compare their role for power quality improvement.
- (d) What are the passive filters? Explain the factors to be considered for designing a passive filter. Also explain their limitations.
- (e) What are Power Conditioners? Explain working principle of Unified Power Quality Conditioner (UPQC)?
- (f) Distinguish between voltage sag and under voltage? Briefly discuss the techniques used for sag or dip mitigation.
- (g) What causes voltage imbalance in a system? What are its consequences? How is it different from voltage fluctuation?
- (h) Enumerate the devices used to check the voltage related power quality in power system. Discuss any one of them in detail.

SECTION – C**Attempt any two parts of the following questions:****2 x 15 = 30**

3. What is the significance of neutral voltage? Under which conditions it suffers swings? What can be done to prevent the same?
4. What do you understand by harmonics? What are different types of harmonics? Explain the different detrimental effects of harmonics with suitable examples.
5. What are the causes of interruptions? How do short duration interruptions differ from sustained interruptions? What is the importance of interruptions?

