

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?