

Seat No.	
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Set P
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**B.E. (Part – II) (CGPA) Examination Nov/Dec-2019**  
**Electrical Engineering**  
**POWER QUALITY**

Day & Date: Tuesday, 26-11-2019  
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.  
 2) Figures to the right indicate full marks.

**MCQ/Objective Type Questions**

Duration: 30 Minutes

Marks: 14

**Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14**

- 1) Which one of the following device is used for improving the power factor of the system?
  - a) Shunt reactor
  - b) Synchronous phase modifier
  - c) Series reactor
  - d) Asynchronous reactor
- 2) Shunt compensation in EHV line is resorted to \_\_\_\_\_.
  - a) Improve voltage profile
  - b) Reduce fault current
  - c) Improve stability
  - d) Increase current
- 3) The main reason for generation of harmonics in a transformer could be \_\_\_\_\_.
  - a) fluctuating load
  - b) poor insulation
  - c) mechanical vibrations
  - d) saturation of core
- 4) Which fractional pitch will eliminate the seventh harmonic from the voltage waveform of an alternator?
  - a) 6/7
  - b) 7/8
  - c) 5/6
  - d) None of the above
- 5) What is the actuating quantity for the relays?
  - a) Magnitude
  - b) Frequency
  - c) Phase angle
  - d) All of these
- 6) Active filters are generally made up of \_\_\_\_\_.
  - a) L circuits
  - b) RL circuits
  - c) RLC circuits
  - d) RC circuits
- 7) Ability of circuit to respond to a certain frequency and discriminate against all other frequencies is called \_\_\_\_\_.
  - a) Resonance
  - b) Discrimination
  - c) Selectivity
  - d) Quality
- 8) Harmonics cause which of the following \_\_\_\_\_.
  - a) All the Options are Correct
  - b) Nuisance Tripping
  - c) Capacitor Failure
  - d) Heating in windings
- 9) Voltage dips cannot be caused by which of the following \_\_\_\_\_.
  - a) Local and Remote faults
  - b) Inductive Loading
  - c) Switching on of Large Loads
  - d) Capacitive Switching

- 10) Which of the following is not considered as good power quality voltage?
- a) Supplied at Constant Velocity
  - b) Having a Constant sine wave with fundamental component
  - c) Power Supply is more compared to demand
  - d) Has a constant RMS Value unchanged with time
- 11) Which one of the following cannot be possible with voltage surges?
- a) Flicker in Incandescent Lamps
  - b) Tripping Of Sensitive Equipment
  - c) Damaging to insulation
  - d) Damage to electronic components
- 12) Which of the following is long-term (hours-long) voltage sags caused by system overload?
- a) Brown out
  - b) Black out
  - c) Voltage surge
  - d) Voltage dip
- 13) Which one of the following is waveform distortion?
- a) Notching
  - b) Electrical noise
  - c) All the options are correct
  - d) DC offset
- 14) Continuous and rapid variations in the load current magnitude which causes voltage variations.
- a) Flicker
  - b) Voltage distortion
  - c) Harmonics
  - d) Voltage sag

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**B.E. (Part – II) (CGPA) Examination Nov/Dec-2019**  
**Electrical Engineering**  
**POWER QUALITY**

Day &amp; Date: Tuesday, 26-11-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.

**Section – I**

**Q.2 Attempt any four.** **16**

- a) Explain different methods of preventing fault.
- b) Explain power quality susceptibility criteria.
- c) With neat waveform, explain how voltage sag is produced during starting of induction motor.
- d) Explain various causes of transient overvoltage in a power system.
- e) What is meant by static transfer switches?

**Q.3 Attempt any two.** **12**

- a) Explain with neat diagram transients produced by:
  - 1) Single capacitor switching
  - 2) Back to back capacitor switching
- b) Define, explain the causes and effects of the following power quality problems :
  - 1) Voltage sag
  - 2) Flicker
- c) With the help of flow chart explain the procedure of power quality problem evaluation.

**Section – II**

**Q.4 Attempt any four** **16**

- a) Define and write equation of following harmonic indices
  - 1) Individual Harmonic Distortion
  - 2) Total Harmonic Distortion
  - 3) Total Demand Distortion
- b) Define power quality monitoring. Enlist various power quality monitoring equipment's.
- c) Explain with block diagram power quality monitoring system along with compensating equipment.
- d) Explain with neat circuit diagram and phasor diagram; principle of power factor correction.
- e) Explain various effects of harmonics in a power system

**Q.5 Attempt any two.** **16**

- a) Define grounding. Explain reasons of grounding. Explain different problems associated with wiring and grounding.
- b) Explain with neat diagram operation of shunt active filter and series passive filter used for harmonic mitigation.
- c) Explain with neat diagram following grounding systems:
  - 1) Properly grounded electrical system
  - 2) Isolated grounded electrical system