

Note: Attempt all questions. The question paper contains 70 MCQ type questions. Each question carries equal marks. Select the answer and fill the bubble corresponding to that question in the attached OMR sheet.

1. Which one of the following is waveform distortion:
(A) Notching
(B) Electrical Noise
 (C) All the options are correct
(D) DC offset.
2. Most of the power quality problems are related to.....
(A) Transmission issue
(B) grounding issue
 (C) distribution issue
 (D) all of the above
3. Continuous and rapid variations in the load current magnitude which causes voltage variations:
(A) Flicker
 (B) Voltage distortion
(C) Harmonics
(D) Voltage Sag.
4. Which of the following is not considered as good power quality voltage:
(A) Having a constant sine wave with fundamental component
 (B) Supplied at constant velocity
 (C) Power supply is more compared to demand
(D) Has a constant RMS Value unchanged with time.
5. Harmonics Present in the system will cause interference with neighboring Telephone Lines.
 (A) True
(B) False
(C) both
(D) None of above.
6. Which one of the following cannot be possible with voltage surges:
 (A) Damaging to insulation
(B) Damage to electronic components
(C) Tripping of Sensitive Equipment
 (D) Flicker in Incandescent Lamps.
7. Harmonics cause which of the following:
(A) Nuisance Tripping
 (B) All the Options are Correct
(C) Heating in windings
(D) Capacitor Failure.
8. Filters are used to reduce which of the following:
 (A) Harmonics
(B) Voltage Distortion
(C) All the options are correct
(D) Voltage Sag.
9. Which of the following is long-term (hours-long) Voltage sags caused by system overload:

- (A) Brown out
 - (B) Voltage dip
 - ~~(C)~~ Black out
 - (D) Voltage Surge.
10. Which of the following contribute to the low voltage and poor power factor:
- (A) Harmonics
 - (B) Reactive power
 - (C) Load Imbalance
 - ~~(D)~~ All the options are correct.
11. Lightening and Tree striking on a live conductor is an example..... power quality.
- (A) Voltage sag
 - (B) voltage swell
 - (C) interruption
 - ~~(D)~~ Surge.
12. Voltage dips cannot be caused by which of the following:
- (A) Local and Remote faults
 - (B) Inductive Loading
 - ~~(C)~~ Capacitive Switching
 - (D) Switching on of Large Loads.
13. ----- is the short time reduction in the rms voltage between 0.1 to 0.9 p.u. for a duration of 0.5 cycle to 1 minute:
- (A) Voltage Surge
 - ~~(B)~~ Voltage Sag
 - (C) Voltage degradation
 - (D) Voltage interruption.
14. Which of the following will not comes under disturbance with respect to power quality.
- ~~(A)~~ Interruption in supply
 - (B) Voltage Sag
 - (C) Harmonic Distortion
 - (D) Transients.
15. Which of the following is not a source of harmonic current:
- (A) Computers
 - (B) UPS systems
 - (C) Capacitor Switching
 - ~~(D)~~ Resistive Load.
16. The third harmonic currents are known as
- (A) Positive sequence harmonics
 - (B) Negative sequence harmonics
 - ~~(C)~~ Zero sequence harmonics
 - (D) both positive and Negative sequence harmonics.
17. In which of the following condition does voltage unbalance occurs:
- (A) When voltage magnitude in all the three phases are not identical
 - (B) when the phase angle between phases are not equal to 120 degree
 - ~~(C)~~ Both the options are correct
 - (D) both the option are incorrect.
18. DC circuit has which of the following harmonic components:
- (A) Positive sequence harmonics

- (B) Negative sequence harmonics
~~(C)~~ DC circuit will have no harmonic components
 (D) Zero sequence harmonics.
19. The voltage swell is the change of RMS value between.....
 (A) 1.2 pu to 1.4 pu
~~(B)~~ 1.1 pu to 1.8 pu
 (C) 1.3 pu to 1.4 pu
 (D) 2.1 pu to 2.4 pu.
20. 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.
21. The most common cause of long interruption.....
 (A) Faults
 (B) Outages
~~(C)~~ both (A) & (B)
 (D) none of the above.
22. The disturbances are introduced into which systems.
~~(A)~~ Power distribution systems
 (B) power transmission systems
 (C) power generation systems
 (D) Communication systems.
23. Noise a disturbance in the
 Flow of electricity.
 (A) Difficult
~~(B)~~ smooth
 (C) interrupt
 (D) none of above.
24. Series filters consist of which circuit:
 (A) A series RC
 (B) a parallel LC
 (C) a parallel RC
~~(D)~~ a series LC circuit.
25. Interruption is
 (A) Complete loss of power
 (B) Complete loss of voltage
 (C) Complete loss of current
~~(D)~~ all the above.
26. Outage is the
 (A) Removal of primary component
~~(B)~~ No power Generation
 (C) Transmission Faults
 (D) None of the above.
27. Single phase Tripping is generally used in which system.
 (A) Transmission system
 (B) Distribution system
~~(C)~~ Low voltage system
 (D) Generation system.
28. The short interruptions occurs for
 (A) Less than two complete cycles
 (B) exact two complete cycles
~~(C)~~ less than one complete cycles
 (D) exact one complete cycles.
29. The most common way to calculate voltage sag is from
 (A) Average voltage
 (B) peak voltage
~~(C)~~ RMS voltage
 (D) none of the above.

30. Effect of temperature rise in overhead lines is to
- (A) Increase Sag decrease tension
 - (B) Decrease Sag increase tension
 - (C) increase both a & b
 - (D) Decrease both a & b
31. What should be the value of sag for proper operation of overhead transmission line?
- (A) High
 - (B) Low
 - (C) Neither too low nor too high
 - (D) anything.
32. During Sag, power electronic component will trip, this will decrease.....
- (A) Load voltage
 - (B) Supply voltage
 - (C) Load current
 - (D) none of the above.
33. The equipments sensitive to magnitude of voltage sags are.....
- (A) Personal computers
 - (B) fluorescent lamps
 - (C) programmable logic controllers
 - (D) all of the above.
34. Angle of zone of protection of Lightning protection system is approximately.
- (A) 70 degree
 - (B) 45 degree
 - (C) 20 degree
 - (D) 10 degree.
35. Which of the following is used for providing protection against incoming surges?
- (A) Silicon oxide
 - (B) metal oxide
 - (C) germanium oxide
 - (D) none of above.
36. In case of Air termination for continuous roof ridges air termination should be spaced..... Feet.
- (A) 30 feet
 - (B) 25 feet
 - (C) 20 feet
 - (D) 15 feet
37. Electrical Surges are to be caused because of which one of the following.
- (A) Lightning strikes
 - (B) EHV switching
 - (C) both (A) &(B)
 - (D) none.
38. Which among the following methods is used for improving the system stability?
- (A) Increase the system voltage
 - (B) Reducing the transfer reactance
 - (C) using high speed circuit breaker
 - (D) all of the above.
39. Which one of the following cannot be possible with voltage surges:

- (A) Tripping of sensitive equipment
 - ~~(B)~~ damaging to insulation
 - ~~(C)~~ flicker in incandescent lamp
 - (D) damage to electronic components.
40. FACTS devices are generally used for the compensate..... Of the transmission line.
- ~~(A)~~ Reactance
 - (B) Resistance
 - (C) Conductance
 - (D) Admittance.
41. Line drop compensation corrects for.
- (A) Line drop lagging power factor
 - (B) voltage at leading power factor
 - ~~(C)~~ Transformer voltage drop
 - (D) voltage drop in feeder lines.
42. Main advantage of DC transmission over AC.
- (A) Maintenance of substations is easy
 - (B) Switches & breaker have no limits
 - (C) No commutation problems
 - ~~(D)~~ Reduced corona loss & interference.
43. TSC-TSR will compensate Q in which region
- ~~(A)~~ Capacitive-inductive
 - (B) Capacitive only
 - (C) Inductive only
 - (D) none of these.
44. Transmission efficiency increases as:
- ~~(A)~~ Voltage and power factor both increase
 - (B) voltage and power factor both decrease
 - (C) voltage increases but power factor decreases
 - (D) Voltage decreases but power factor increases.
45. FACTS devices used in
- (A) Generation
 - ~~(B)~~ AC transmission
 - (C) DC transmission
 - (D) none.
46. Which are the shunt compensation devices
- (A) TCSC
 - (B) SSSC
 - (C) UPFC
 - ~~(D)~~ SVC
47. STATCOM and SSSC will make
- (A) UPQC
 - (B) TCSC
 - ~~(C)~~ UPFC
 - (D) SVR
48. Losses in FC-TCR will vary in the range of
- (A) 0.5 - 0.9 %
 - ~~(B)~~ 0.8 - 1.5 %
 - (C) 0.5 - 0.12 %
 - (D) 0.5 - 0.7 %
49. The main objective of series compensation
- (A) It improve the power factor

- (B) it reduces the fault currents
~~(C)~~ Reduce the voltage drop over long distance
 (D) none.
50. The main mitigation equipment is.....
 (A) UPS
 (B) Storage device
 (C) Voltage source converter
~~(D)~~ all of above
51. A UPQC consists of which compensators.
 (A) Series
~~(B)~~ both shunt and series
 (C) shunt
 (D) none of above.
52. A DVR is a series device that generates an
~~(A)~~ Dc voltage
~~(B)~~ ac voltage
 (C) dc current
 (D) ac current
53. A static UPS is a solid state system relaying solely on battery as an emergency source
~~(A)~~ Current
 (B) power
 (C) voltage
 (D) all of above.
54. Harmonic Analyzer uses which of the following analysis to identify the predominate harmonic component.
 (A) Time domain analysis
~~(B)~~ Frequency domain analysis
 (C) both (A) and (B)
 (D) none.
55. Harmonics in transformer result in:
~~(A)~~ increased core losses
 (B) increased I²R losses
 (C) magnetic interference with communication circuits
~~(D)~~ All of the above.
56. 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.
57. With 100 % series compensation of lines:
 (A) The circuit is series resonant at power frequency
 (B) low transient voltage
 (C) high transient current
~~(D)~~ (A) and (b).
58. If α is the angle of voltage wave at which an R-L circuit is switched in and θ is the impedance angle of the R-L circuit. There will be no transient when the circuit is switched in, if:
 (A) $\alpha = 0$
~~(B)~~ $\alpha = 90$
 (C) $\alpha = 90 + \theta$
 (D) None of the above.
59. There are no transients in pure resistive circuits because they:

- (A) offer high resistance
~~(B) obey ohm's law~~
 (C) have no stored energy
 (D) are linear circuits.
60. Transient current in electrical circuits are associated with:
 (A) inductors
 (B) capacitors
 (C) resistors
~~(D) both (A) and (b).~~
61. The transients which are produced due to sudden but energetic changes from one steady state of a circuit to another are called transients.
~~(A) Initiation~~
 (B) transition
 (C) relaxation
 (D) subsidence.
62. In an R-L circuit connected to an alternating sinusoidal voltage, size of transient current primarily depends on:
 (A) the instant in the voltage cycle at which circuit is closed
~~(B) the peak value of the steady state current~~
 (C) the circuit impedance
 (D) the voltage frequency.
63. The transient current in an R-L-C circuit is oscillatory when
~~(A) $R=0$~~
 (B) $R > 2\sqrt{L/C}$
 (C) $R < 2\sqrt{L/C}$
 (D) $R = 2\sqrt{L/C}$.
64. The transient current in a loss-free L-C circuit when excited from an ac source is a/an sine wave.
~~(A) Over-damped~~
 (B) un damped
 (C) under-damped
 (D) critically damped.
65. In a 3-phase system, the harmonic has negative phase sequence of RBY.
 (A) 9
 (B) 13
~~(C) 5~~
 (D) 15.
66. Two complex waves will have the same wave-shape if :
 (A) They contain the same harmonics
 (B) ratio of corresponding harmonics to their respective fundamentals is the same
 (C) harmonics are similarly spaced with respect to their fundamental
~~(D) they have all of the above.~~
67. Due to harmonics in transformer which of the following losses increases:
 (A) Eddy current loss only
 (B) Hysteresis loss only
~~(C) Both hysteresis loss and eddy current loss~~
 (D) copper loss.

68. Which of the following device is not the source of harmonics:

- (A) Arcing devices
- (B) computers
- (C) Ferromagnetic devices
- (D) pure resistive loads.

69. When analyzing a non sinusoidal waveform, it is often important to know the of the harmonics components present.

- (A) Phase angle only
- (B) Magnitude only
- (C) Magnitude and phase angle
- (D) voltage only.

70. Harmonics can be eliminated by introducing which of the following:

- (A) Filters
- (B) Low impedance path
- (C) High impedance
- (D) Resonant circuit.
