SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : PQ (16EE230) **Course & Branch**: B.Tech - EEE
Year & Sem: IV-B.Tech & I-Sem **Regulation:** R16

UNIT –I
Introduction

1.	What is power quality? Why we are concern about power quality?	[CO1]	[L1]	10M
2.	Explain about the power quality evaluation procedure.	[CO1]	[L1]	10M
3.	Classify the different types of power quality issues.	[CO]	[L2]	10M
4.	a) What are the types of wave form distortion?	[CO1]	[L1]	5M
	b) Write a short note on voltage imbalance	[CO1]	[L2]	5M
5.	What are the power quality standards?	[CO2]	[L1]	10M
6.	What are the responsibilities of end users and suppliers of electric power supply?	[CO1]	[L1]	10M
7.	Draw and explain the CBEMA curve	[CO1]	[L1]	10M
8.	Draw and explain ITI curve	[CO1]	[L2]	10M
9.	Explain the power quality terminology	[CO2]	[L1]	10M
10.	a) Define notching	[CO1]	[L2]	2M
	b) What is ment by dc offset	[CO1]	[L1]	2M
	c) Define coupling	[CO1]	[L2]	2M
	d) What is ment by surge	[CO1]	[L1]	2M
	e) Define flicker	[CO1]	[L2]	2M

UNIT –II
Transients, short duration and long duration variations

1.	Draw and explain the impulsive and oscillatory transients	[CO2]	[L1]	10M
2.	Mention the categories and characteristics of electromagnetic phenomena in power systems?	[CO2]	[L3]	10M
3.	What are the sources of transient over voltages? Explain clearly.	[CO2]	[L2]	10M
4.	a) Explain the long duration voltage variations.	[CO2]	[L2]	5M
	b) Explain the short duration voltage variation.	[CO2]	[L1]	5M
5.	What are the principles of over voltage protection? Explain with diagram.	[CO2]	[L1]	10M
6.	Classify the principles of regulating the voltage	[CO2]	[L2]	10M
7.	Explain in detail the role of capacitors for the voltage regulation.	[CO2]	[L1]	10M
8.	Explain the effect of line drop compensation on the voltage profile.	[CO2]	[L1]	10M
9.	What are the conventional devices available for the voltage regulation?	[CO2]	[L1]	10M
10.	a) Define oscillatory transient?	[CO2]	[L1]	2M
	b) What is the main cause for impulsive transient?	[CO2]	[L1]	2M
	c) Define Sag?	[CO2]	[L1]	2M
	d) What is the frequency range and duration in medium frequency transient?	[CO2]	[L2]	2M
	e) When an interruption occurs.	[CO2]	[L2]	2M

UNIT –III
Fundamentals of harmonics and applied harmonics

1.	What is harmonic distortion? Discuss about the voltage versus current distortion.	[CO2]	[L2]	10M
2.	a) Write the impact of voltage distortion and current distortion.	[CO1]	[L3]	5M
	b) Explain the commonly used indices for measuring of harmonic content in the waveform.	[CO1]	[L1]	5M
3.	Explain the power system quantities under non sinusoidal condition.	[CO1]	[L1]	10M
4.	What are the harmonics sources from commercial loads?	[CO2]	[L2]	10M
5.	What are the harmonics sources from industrial loads?	[CO2]	[L2]	10M
6.	Explain the brief description about the harmonic distortion evaluation.	[CO2]	[L1]	10M
7.	Explain the principles of controlling harmonics.	[CO2]	[L1]	10M
8.	Explain the various devices for the controlling of harmonics distortion.	[CO2]	[L1]	10M
9.	What are effects of harmonics? Explain harmonic distortion evaluation procedure?	[CO2]	[L2]	10M
10.	a) What is ment by harmonics?	[CO2]	[L2]	2M
	b) What is percentage of fluorescent lighting in commercial loads?	[CO2]	[L2]	2M
	c) Define THD	[CO2]	[L2]	2M
	d) What is the purpose of line reactor?	[CO2]	[L2]	2M
	e) What is ment by TDD?	[CO2]	[L2]	2M

UNIT –IV
Power quality monitoring

1.	a) Write a short note on power quality monitoring standards.	[CO3]	[L2]	5M
	b) Write about any one power quality measurement equipment.	[CO3]	[L2]	5M
2.	Explain the various power quality monitoring considerations.	[CO3]	[L1]	10M
3.	Explain about various power quality measuring equipment.	[CO3]	[L1]	10M
4.	Explain the categories of instruments to consider for harmonic analysis.	[CO3]	[L1]	10M
5.	Explain about smart power quality monitors.	[CO3]	[L1]	10M
6.	Explain about the flicker meters.	[CO3]	[L2]	10M
7.	Explain the applications for system maintenance, operation and reliability.	[CO3]	[L1]	10M
8.	Explain about the permanent power quality monitoring equipment.	[CO3]	[L1]	10M
9.	Explain about the power quality bench marking.	[CO3]	[L1]	10M
10.	a) What is ment by true RMS?	[CO3]	[L3]	2M
	b) Define multimeter	[CO3]	[L2]	2M
	c) Why the flicker meter is need?	[CO3]	[L2]	2M
	d) What is revenue meters?	[CO3]	[L3]	2M
	e) What is purpose of digital fault recorders?	[CO3]	[L2]	2M

UNIT –V

Power quality enhancement using custom power devices

1.	What is the need for current limiter? Discuss the operation of a Solid state current limiter.	[CO4]	[L2]	10M
2.	What are the advantages of solid state current limiters compared to conventional current limiters? Discuss.	[CO4]	[L2]	10M
3.	What are the advantages of static var compensators? Discuss the operation of Static Series Compensators?	[CO4]	[L2]	10M
4.	Draw and explain the schematic diagram of a right shunt UPQC?	[CO4]	[L3]	10M
5.	How UPQC protects the load from harmonic voltages? Discuss.	[CO4]	[L2]	10M
6.	Explain the solid transfer switch transfer with the transfer operation?	[CO4]	[L1]	10M
7.	Explain the Solid State Breaker principle of operation?	[CO4]	[L1]	10M
8	.Draw and explain the schematic diagram Dynamic Voltage Restorer?	[CO4]	[L3]	10M
9.	Explain the principle of DVR operation used for sag mitigation?	[CO4]	[L1]	10M
10.	a)Give the list of two groups custom power devices?	[CO4]	[L1]	2M
	b)Give the complete classification of custom power devices?	[CO4]	[L1]	2M
	c)What is Static Current Limiter?	[CO4]	[L2]	2M
	d)What is Static Transfer Switch?	[CO4]	[L2]	2M
	e)What is Solid State Breaker?	[CO4]	[L2]	2M

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UNIT – I

Introduction

1. A Manufacturer of load equipment may define power quality has those characteristics of the --------- that enables the equipment to work properly. [ ]

A) Power supply B) Load

C) Miss operation D) Frequency

2. Any power problem manifested in voltage, current, or frequency deviations that result in ----- of customer equipment. [ ]

A) Failure or misoperation B) voltage sag
C) Voltage swells D) frequency

3. The current resulting from a short circuit causes the ---------- Completely. [ ]

A) Voltage to sag B) voltage improvement
C) Capacitive load D) inductive load

4. Distorted currents from ----------loads also distort the voltage as they pass through the system impedance. [ ]

A) Capacitive B) inductive
C) Harmonic producing D) voltage sag

5. Sag is used as a synonym to the IEC term ---------- [ ]

A) short circuit B) dip

C) Swell D) voltage

6. The term swell is introduced as an inverse to---------- [ ]

A) short circuit B) Harmonics
C) ANSI D) dip

7. A utility engineer may think of a surge as the transient resulting from a lightning stroke for which a ----------is used for protection. [ ]

A) surge arrester B) Lightning phenomenon

C) Circuit breaker D) isolator

8. An ---------- is a sudden non – power frequency change in the steady state condition of voltage, current or both that is unidirectional in polarity . [ ]

A) Short circuit B) surge
C) Impulse transient D)open circuit

9. A transient with a primary frequency component less than 5 kHz, and a duration from 0.3 to 50ms, is considered a ---------- [ ]

A) High frequency transient B) low frequency transient
C) Medium frequency transient D) pulse width

10. Oscillatory transients with principal frequencies less than --------- can also be found on the distribution system. [ ]

A) 50Hz B) 100Hz C) 150Hz D) 300Hz

11. Long-duration variations encompass root-mean square (rms) deviations at power frequencies for longer than ---------- [ ]

A) 1min B) 2min C) 3min D) 5min

12. An ----------is an increase in the rms ac voltage greater than 110 percent at the power frequency for a duration longer than 1 min. [ ]

A) Under voltage B) Over voltage
C) Flicker D) None

13. An ----------is a decrease in the rms ac voltage to less than 90 percent at the power frequency for a duration longer than 1 min [ ]

A) Under voltage B) Over voltage
C) Flicker D) None

14. An ---------- occurs when the supply voltage or load current decreases to less than 0.1 pu for a period of time not exceeding 1 min. [ ]

A) Interruption B)sag C)Swell D)None

15. A ---------- is a decrease to between 0.1 and 0.9 pu in rms voltage or current at the power frequency for durations from 0.5 cycle to 1 min [ ]

A) Flicker B) Harmonics C) Swell D) Sag

16. A ---------- is defined as an increase to between 1.1 and 1.8 pu in rms voltage or current at the power frequency for durations from 0.5 cycle to 1 min. [ ]

A) Flicker B) Harmonics C) Swell D) Sag

17. ----------defined as the maximum deviation from the average of the three phase voltages or currents, divided by the average of the three phase voltages or currents, divided by the average of the three phase voltages or currents. [ ]

A) Waveform distortion B) Voltage unbalance
C) Noise D) Notching

18. ---------- is defines as a steady state deviation from an ideal sine wave of power frequency principally characterized by the spectral content of the deviation. [ ]

A) Waveform distortion B) Voltage unbalance
C) Noise D) Notchi

19. Voltages or currents having frequency components that are not integer multiples of the frequency at which the supply system is designed to operate are called ---------- [ ]

A) Harmonics B) Flickers C) Inter harmonics D)All

20. Voltage sag is caused by [ ]

A) System faults B) Load variations

C) Starting of large motors D) A & B

21. Unwanted electric signal with broad band is [ ]

A) Notching B) DC offset C) Noise D) Harmonics

22. The presence of DC in AC system is [ ]

A) Notching B) DC offset C) Noise D) Harmonics

23. Voltage fluctuations is sometimes called as [ ]

A) sag B)Swell C)Flicker D)Noise

24. The duration of voltage sag is [ ]

A) 0.25cycle -0.5min B) 0.5cycle-1min

C) 1cycle-1min D) None

25. The duration of voltage swell is [ ]

A) 0.25cycle -0.5min B) 0.5cycle-1min
C) 1cycle-1min D) None

26. Waveform distortion is [ ]

A) Frequency variation B) Steady state deviation

C) A&B D) None

27. Endures are better informed about [ ]

A) Sags B) Transients C)A&B D)None

28. The ultimate reason that we are concerned about power quality is [ ]

A) Technical value B) Economic value
C) A&B D) None

29. Voltage fluctuations is also called as [ ]

A) Flicker B) Surge C) Frequency variation D) None

30. CBEMA curve is replaced by [ ]

A) ITI B) IIT C) CMT D) None

31. Interruptions occur due to [ ]

A) Power system faults B)Equipment failure
C)Control mal function D)All

32. Loads can exhibit continues rapid variations in load current magnitude results of [ ]

A) Flicker B)Sag C)Swell D)None

33. The portion of CBEMA curve is adapted from [ ]

A) IEEE B)IEC C)ICC D)IOC

34. Ratio between the peak value and RMS value of a periodic waveform [ ]

A) Coupling B)Crest factor C)Distortion D)Deviation

35. large current that load draws when initially turned on is [ ]

A)Impulse B)Crest factor C)Coupling D) inrush

36. Power quality is……quality [ ]

A)Voltage quality B)Current quality

C)Frequency quality D)All

37. ITI curve is applicable for …… [ ]

A)120Volts B)160Volts C)180 Volts D)100Volts

38. A loss of equipment operation due to noise ,sag or interruption [ ]

A) Dropout B)Dip C)Distortion D)Fault

39. Fault generally refers to a ……on the power system [ ]

A)Open circuit B)Shot circuit

C)A&B D)Flicker

40.The systematic variations of the voltage envelop is called [ ]

A)Fluctuations B)Deviations

C)Distortions D)Frequency variations

UNIT –II
Transients, short duration and long duration variations

1. ---------- are used to provide reactive power to correct the power factor, which reduces losses and supports the voltage on the system. [ ]

A).circuit breakers B).fuses C) capacitors D) surge arresters

2. Newer high – energy MOV arresters for low voltage applications can withstand ------- [ ]

A) 2 to 4 kJ B) 400kJ C) 500kJ D) 600kJ

3. The initial transient frequency is above 1.0 kHz and appears as a small amount of ---------- on the front of the waveform. [ ]

A) hash B)flash C)dash D)crash

4. The main function of surge arresters and TVSS is to limit the ----------that can appear between two points in the circuit. [ ]

A) Power B) voltage C) current D) frequency

5. ---------- are normally open devices that conduct current during over voltage transients. [ ]

A) bar-bar B) vov-bar C)crow bar D)screw-bar

6. An isolation transformer used to attenuate ---------- [ ]

A) High frequency B) transients stability
C) Normal current D) high frequency noise and transients

7. ----------combines two surge suppressors and a low pass filter to prove maximum protection. [ ]

A) Normal protector B).hybrid protector

C) Liquid protector D) line projector

8. ---------- can reduce the capacitor switching transients. [ ]

A) Linear resistors B) Carbon resistors
C) Pre-insertion resistors D) Transistors

9. Popular strategy for reducing transients on capacitor switching is to use a ---------- [ ]

A) Closing breaker B) circuit breaker
C) Synchronous closing breaker D) line sectionalizes

10. The transformer would have to be loaded approximately 20 to 25 percent of resistive equivalent load to limit Ferro resonance over voltages to ----------percent [ ]

A) 10 B) 20 C) 125 D) 225

11. Utilities generally try to maintain the service voltage supplied to an end user within the [ ]

A) +/_ 2 percent of nominal B) +/_ 3 Percent of nominal
C) +/_ 4 percent of nominal D) +/_ 5 Percent of nominal

12. The approach to flicker causing loads is to apply devices that are commonly called [ ]

A) Static var compensators B) dynamic compensators
C) Series capacitors D) none

13. Utility line voltage regulators and substation LTCS are relatively [ ]

A) medium B)high C)A&B D)slow

14. Electronic tap switching regulators can also be used to regulate [ ]

A) current B)voltage C)power D)energy

15. Magnetic synthesizers although intended for short duration voltage [ ]

A) swell B)sags C)A&B D)frequency

16.Motor generator sets are also used for [ ]

A) voltage sag B)voltage swell C)voltage regulation D)compensation

17.The line drop compensator settings are called [ ]

A)R&V B)V&I C)P&V D)R&X

18.Capacitors may be used for voltage regulation on the power system in [ ]

A)Shunt configuration B)series configuration

C)Shunt or series configuration D)A,B,&C

19.Series capacitors cannot tolerate [ ]

A)fault current B)fault voltage C)fault impedance D)A&B

20.Capacitor switching is source of------ [ ]

A)transient B)noise C)distortion D)flicker

21.Lightning is main source of -------- [ ]

A)oscillatory transient B)impulsive transient
B)harmonics D)all

22.clamping are used in ------- circuits [ ]

A)A B)DC C)A,B D)none

23.Impulsive transients are presents in only ---------directions [ ]

A)positive or negative B)positive C)negative D)all

24.Ballast is ----------limiting device in lightning applications [ ]

A)voltage B)impedance C)current D)none

25.Capacitor switching is one of the source of ---------- [ ]

A)transient over voltage B) sag C)interruptions D)none

26.High energy transients are first handled by--------- [ ]

A)low-pass filter B) gap-type protector C)both D)none

27.power conditioners are similar to-------- [ ]

A)Low-pass filters B)isolation T/F
C)TVSS D)none

28. The inductor in the low pass filter bloks the------- [ ]

A)High freq transients B)low freq transients

C)both D)none

29. Transients is also called as [ ]

A) Interruption B) Surge C) Voltage-variation D) None

30. Short duration voltage variation is caused by [ ]

A)Loose connection B) Switching C) Load variation D) None

31. The Voltage drops too low under _ load [ ]

A) Heavy B) Light C) Both D) None

32. Which is example of isolation device [ ]

a) Ups s/m B) Ferro resonant t/f C) Motor Generator set D) All

33. Which one is more efficient in Voltage regulation device [ ]

A) Ferroresonant B) Electronic tap switching solutions
C) Magnetic synthesizer D) none

34. The drawback of motor – generator set is [ ]

A) Response time is large B) Losses are high

C) both D) None

35. In series capacitors, Voltage rise is zero at [ ]

A) No load B) full load C) both D) None

36. In shunt capacitor, % voltage rise is independent of [ ]

A) load B) supply C) both D) None

37. In series capacitor, the S/M losses are ____ than shut capacitor [ ]

A) more B) less C) equal D) none

38. in cyclic Flicker is a result of ___ Voltage fluctuation [ ]

A) Periodic B) Non periodic C) Occasional D) Non occasional

39. Zig – Zag transformers act like a filter to the zero sequence current by offering ___ [ ]

A) high impedance path to neutral B) Low impedance path to neutral

C) Any of the above D) None

40. Notch filters can provide ___ to harmonic suppression [ ]

A) power factor B) voltage

C) Reactive power D) Active power

UNIT –III
Fundamentals of harmonics and applied harmonics

1. ---------- is the average rate of delivery of energy. [ ]

A)active power B) reactive power C)apparent power D) voltage

2. ---------- is a ratio of useful power to perform real work to the power supplied by a utility. [ ]

A)active power B)reactive power C)power factor D)apparent power

3. ----------become an important issue for grounded wye systems with current flowing on the neutral. [ ]

A)fourth harmonics B) Triple harmonics

C)fifth harmonics D) seventh harmonics

4 ----------is a measure of the effective value of the harmonic components of a distorted waveform. [ ]

A)fifth harmonic B)triplen harmonic

C)total harmonic distortion D) seventh harmonics

5. A distinctive characteristic of switch mode power supplies is a very high ----------harmonic content in the current. [ ]

A) fifth B)seventh C)third D) ninth

6. ----------are induced currents in a transformer caused by the magnetic fluxes. [ ]

A)hysteresis losses B)eddy current losses

C) friction losses D)stay losses

7. Harmonic voltage distortion at the motor terminals is translated into ---------- within the mot [ ]

A)eddy current losses B)Harmonic fluxes

C) Power D) stay losses

8. The typical range of frequencies for induction furnaces is ---------- [ ]

A) 150 to 1200 kHz B) 150 to 1200 Hz C)10Hz D) 3000Hz

9. -------- is the only step required for dc drives. [ ]

A) Rectification B). inverter

C) cyclo converters D) cyclo inverters

10. A frequency that is an integer multiple of the fundamental frequency is called ---------- [ ]

A) harmonic frequency B) switching C) transient D)voltage

11. Crest factor for sinusoidal wave is [ ]

A) 1.123 B) 1.232 C) 1.343 D) 1.414

12. The Voltage distortion on transmission system is less than __% [ ]

A) 5% B)10% C) 1% D) 15%

13. Voltage distortion depends on the current& -------- [ ]

A)Voltage B)current C) Frequency D) Impedance

14. Most common type of passive filter is ……. [ ]

A) Single tuned filter B) double tuned filter C) high pass filter D) none

15. The current drawn by the ferroresonant transformer increases from [ ]

A) 0.5-2 A B) 0.3-1 A C) 0.2 -2 A D) 0.4 -2 A

16. The devices for controlling harmonic distortions are [ ]

A) Line reactor B) capacitor banks C) zigzag t/f's D) All the above

17. ……. is practically effective method for the PWM type drives [ ]

A) zigzag t/f's B) Line reactor C) filter D) none

18. Some impulse load like rock crushers and tire testers use [ ]

A) Shunt capacitors B) shunt reactors C) series reactors D) series capacitors

19. Which of the following device is a static var compensator [ ]

A) TCR B) TSC C) SSSC D) A and B

20. In electronic tap-switching regulators……..are used [ ]

A) SCR's B) triacs C) A or B D) None

21. Static Var compensators can regulate the voltage by…….. [ ]

A) Supply reactive power B) consumes reactive power C) a or b D) none

22. Due to the series capacitors the voltage rise at no-load is ……. [ ]

A) Minimum B) zero C) maximum D) none

23. The percentage voltage rise at the capacitor is maximum at …… [ ]

A) full-load B) light-load C) no-load D) all

24. …….. Cannot provide reactive power to the feeder load [ ]

A) Shunt capacitors B) shunt reactors C) series capacitors D) None

25. A typical 3% input choke can be reducing the harmonic distortion [ ]

A) 80-40% B) 40-20% C) 10-5% D) 50-40%

26. The devices for controlling harmonic distortions are [ ]

A) Line reactor B) capacitor banks C) zigzag t/f's D) All the above

27. Harmonic control options consist of controlling the harmonic injection from [ ]

A) Linear loads B)Nonlinear loads
C)Harmonic filters D) any of the above

28. The total demand distortion is expressed in terms of the [ ]

A) Average demand B) maximum demand
C) demand factor D) utilization factor

29.The short circuit ratio used to determine the limits on [ ]

A) Harmonic study B) P C C C) T D D D) harmonic currents

30. The source of harmonic currents is too [ ]

A) Low B) medium C) great D) transients

31. Transformer connections can be employed to reduce harmonic currents in [ ]

A) 3 phase systems B)1 phase systems

C)2 phase systems D)any of the above

32. Harmonic problems on distribution feeders often exist only at [ ]

A) Light load B)half load C)full load D)one fourth load

33. Which devices available to control harmonic distortion [ ]

A)a capacitor bank B)a line reactor C)an active filter D)all the above

34. The product of RMS voltage and current is called ……...

A) Active power B) Reactive power C) Apparent power D) None

35. Power system freq is directly related to [ ]

A) Power factor B) Speed C) Both D) None

36 Power system freq is directly related to [ ]

A) Power factor B) Speed C) Both D) None

37. Notch filters can provide ___ to harmonic suppression [ ]

A) power factor B) voltage C) Reactive power

38. Capacitor voltage filers have ___ on its output [ ]

A) High pass filter B) band pass filter

C) low pass filter D) band reject filter

39. C- Filters are alternative to [ ]

A) Low pass broad band filters B) high pass filters

C) Low pass filters D) Pass filters

40. The ration b/w the RMS value and the peak value of a pure sinusoidal waveform is [ ]

A) 0.707 B) 1.11 C) 1.5 D) 1.44

UNIT –IV
Power quality monitoring

1. Power quality monitoring programs are often driven by the demand for improving the system wide [ ]

A)power quality performance B) voltage quality performance
C) current quality performance D)None

2. The methods for characterizing yhe quality of ac power are important for the [ ]

A)power disturbance B) voltage disturbance
C) monitoring requirements D) rms variations

3. Infracted meters can be very valuable in detecting loose connection and [ ]

A)insulators B)semiconductors

C)overheating conductors D) A&B

4. Electrostatic discharge(E S D)can be an important cause of power quality problems in some type of [ ]

A)Electrical equipment B)Electronic equipment
C) Electrical &Electronic equipment D)none

5. The rms value of a signal is a measure of the heating that will result if the voltage is impressed across a [ ]

A)Inductive load B)capacitive load C) resistive load D)none

6.Instruments in the disturbance analyser category have very limited [ ]

A)Harmonic study B) Harmonic injection
C) Harmonic analysis capabilities D)any of the above

7.A simple portable meter for harmonic analysis is [ ]

A)practical B)ideal C)A&B D)medium

8.Historically flicker has been measured using rms meters , load duty cycle, and a [ ]

A)Flicker curve B) T H D C)Load duty cycle D)Measuring flicker

9.Monitoring of power quality on power systems often requires transducers to obtain acceptable [ ]

A)V & I signal levels B)V & P signal levels
C)E & I signal levels D)A&B

10.Frequency response is particularly important for transient and harmonic [ ]

A)Distortion monitoring B)Signal levels C) F T P D)UCAMMS

11.The ---------- project defined several performance indices for evaluating the electric service quality. [ ]

A)EPRI RBM B) RVM C).RGM D)RRM

12. ----------involves the placement of power quality Monitors on the system and characterization of the performance of the System. [ ]

A) Collect RVM data B) Collect RBX data
C)Collect power quality data D) collect RRM data

13.----------could be based on past performance, a standard adopted By similar utilities, or a standard established by a professional . [ ]

A)select EPRI RBM B) select the benchmark
C)Select RVM D) RRM

14. IEEE Standard 1159-1995 defines a sustained interruption as a reduction in the rms voltage to less than ------ percent of nominal voltage for longer than 1 min. [ ]

A) 20 B) 30 C) 40 D) 10

15. A ---------- is the maximum sum of sag score values allowable for a group of locations before compensation. [ ]

A) sag score targets B) interruptions targets
C) sag wind targets D) none of the above

16. A ---------- is the average per unit voltage lost by each of the three phase voltages for the lowest qualifying. [ ]

A)sag score B) interruptions C)sag wind D) dip ice

17. ---------- is based on the mean value of the distribution of voltage THD measurements recorded for each circuit segment rather than the CP95 value. [ ]

A) SATDD B)SATHD C)SATSS D) voltage swell

18. The ---------- are designed to assess the service quality for a specified circuit area [ ]

A) rms variation indices B)maximum voltage indices
C) Average voltage indices D) voltage sag

19. ---------- to serve as metrics for quantifying quality of service. [ ]

A) EPRI RBM B) RVM C)RGM D)ROG

20. STHD95 represent the CP95 value of a weighted distribution of the individual circuit segment CP95 values of voltage ---------- [ ]

A) SDD B)TDD C) THD D)TDDs

21.Digital monitoring instruments incorporate the use of _____ [ ]

A)A to D B)D to A C)Both D)None

22.The frequency response of a standard metering classes V T depends on the _____ [ ]

A)Voltage B)Current C)Type D) Type burden

23.Some substations use capacitively coupled voltage transformers for_____ [ ]

A)Voltage regulation B)Voltage transdusers

C)Frequency D)All

24.Standard metering class C Ts are generally adequate for frequencies up to_____ [ ]

A)5KHz B)3KHz C)2KHz D)10KHz

25.Usually existing substation C Ts and V T s can be used for _____ [ ]

A)PQ maintenance B)PQ Monitoring

C)PQ Consideration D)None

26.For monitoring primary sites involve monitoring at the sending of an unloaded_____[ ]

A)distribution transformer B)Multimeters

C)Fault recorders D)All

27.There are two streams of power quality data analysis _____ [ ]

A)Offline B)Line analysis C)Both D)None

28. The new standard format for interchanging power quality data_____[ ]

A)PQ DIF B)PQ DEF C)PQDAF D)PQ

29.Transient analysis which includes statistical analysis of maximum voltage ,transient duration and

[ ]

A)Transiant B)Transient frequency C)Power D)Current

30. RMS variations is structure into ___ Levels [ ]

A) one B) Two C) Three D) Five

31. ___% of RMS variator are no rectangular [ ]

A) 20 B) 10 C) 30 D) 60

32. RMS variations is structure into ___ Levels [ ]

A) one B) Two C) Three D) Five

33. SAR Fl_x = [ ]

a) $\Sigma N_i/N_t$ B) $\Sigma N_i - 1/N_t$ c) $\Sigma N_i+1/N_t$ D) $\Sigma N_i+1/N_{t-1}$

34. SARFI is us to define _____ [ ]

A) Threshold as a curve B) threshold as a valve

C) Both A and B D) None

35. IEEE – 519 is the standard for [ ]

A) Voltage harmonies B) Current harmonies C) spikes D) sags

36. Voltage magnitude and transient magnitude can be measures by [ ]

A) Spectrum Analyze B) Harmonic Analyze

C) Disturbance Analyze D) RMS meter

37. Determine target performance levels are targets that are appropriate ane economically and ---------- [ ]

A)Feasible B)Unfeasible C)Considerable D)None

38.According to Detloff and Sabin approximately ----------percent of all the voltage sags measured by the Detroit Edison power quality monitoring system fall below ---------- [ ]

A)20,0.75PU B)10,0.7PU C)25,0.6PU D)15,0.9PU

39. An insurance scheme is considered -------if the expected cost of claims equals

the premiums paid. [ ]

A) fair B) unfair C)feasible D)none

40. in RMS variations agreements , maintenance efforts to ---------- the number of faults for events with in the control of the utility. [ ]

A)Increase B)Reduce C)Constant D)All

UNIT –V
Power quality enhancement using custom power devices

1.The concept of custom power was introduced [ ]

A) N. G. Hingorani B) David.N C) Nelson.F D) None

2. A unified power quality conditioner (UPQC) is a combination of [ ]

A) series B) shunt C) series and shunt D) None

3. The network reconfiguration devices are usually called [ ]
A) series switchgear B)switchgear C)series and shunt switchgear D)None

4. The energy exchange between the series and the shunt device in a UPQC takes place through [ ]
A) Inductor B)Resistor C) dc capacitor D)None

5. The compensating custom power devices are used for [ ]

A) active filtering B) load balancing C) power factor improvement D)All

6.Which of the following are compensating custom power devices [ ]

A) UPQC B) Solid State Breaker C) Static Current Limiter D)None

7.Which of the following are Network reconfiguring type custom power devices [ ]

A) UPQC B) Solid State Breaker C) DVR D)None

8. Network reconfiguring type custom power devices that reduces fault current level by inserting series inductance [ ]
A) UPQC B) Solid State Breaker C) DVR D) Static Current Limiter

9.Which of the following is a high- speed switching device [ ]

A) GTO B) MOSFET C)BJT D) Static Current Limiter

10.Which of the following is a high-speed switching power electronic controlling device [ ]

A) UPQC B) Solid State Breaker C) DVR D) Static Current Limiter

11. Dynamic Voltage Restorer is also called as [ ]

A) series-shunt compensator B) shunt compensator C) static series compensator D)None

12.Which of the following devices is called as series voltage booster [ ]

A) UPQC B) Solid State Transfer Switch C) DVR D) None

13. The number of GTO switches depends in a Static Current Limiter [ ]
A) rated peak power B) rated peak voltage C) rated peak current D) None

14. When a deep voltage sag or interruption is detected in this feeder, the load is quickly transferred to the alternate feeder. This switching action is called [ ]

A) make-before-break B) make-after-break C) make-small-break D) None

15. The primary objective of a transfer switch is to protect a sensitive load from [ ]

A) voltage sag/swell B) voltage interruption C) power interruption D) None

16.Which of the following are not compensating custom power devices [ ]

A) UPQC B) Solid State Breaker C) DVR D)None

17.Which of the following are not Network reconfiguring type custom power devices [ ]

A) UPQC B) Solid State Breaker C) Static Current Limiter D)None

18. A solid state breaker can offer the following advantages [ ]

A) limited fault current B) reduced switching surges C) power quality D)None

19. The most efficient and modern custom power device used in power distribution Networks [ ]

A) UPQC B) Solid State Breaker C) DVR D)None

20. DVR is a series connected custom power device, designed to inject a dynamically controlled [ ]

A) voltage B) current C)power D)None

21. DVR consists of an energy storage device, a boost converter (dc to dc), voltage source inverter, ac filter and coupling transformer, connected in [ ]

A) parallel B) series C)series-parallel D)None

22.DVR is a-------- connected device [ ]

A) shunt B) series C) combined series and shunt none D) none

23. Which of the following controller injects voltage in series with the line [ ]

A) Series B) Shunt C) Series-Shunt D)None

24. Which of the following controller injects current in to the system [ ]

A) Series B) Series-Series C) Series-Shunt D) Shunt

25. Which of the following controller provides more effective voltage control [ ]

A) Series B) Shunt C) Series-Series D)None

26. Which of the following device used for high power applications [ ]

A) GTO B) Diode C) Thyristor D)BJT

27. Which of the following controller more effective in current/power flow [ ]

A) Shunt B) Series C) Series-Series D)None

28. Which of the following are sag mitigation devices [ ]
A)DVR B)SSTS C) Active series compensators D)All of the above

29.SSCL consists of a pair of opposite poled switches in parallel with the current limiting [ ]
A) Inductor Lm B) Capacitor Cm C)Capacitor Cs D)none

30.The current limiter is connected ------with the feeder such that it can restrict the current in case of fault down stream [ ]
A) shunt B) series C) combined D) none

31.In SSCL during healthy state condition the opposite poled switch remains— [ ]
A)opened B) closed C) constant D)none

32. The SSTS is also called as---- [ ]
A)STS B)TCR C) TSR D) none

33.The worlds first DVR was installed in the year [ ]
A)1995 B) 1990 C) 2001 D) 2005

34.The UPQC connected in -------different ways [ ]
A) 2 B)3 C) 4 D)5

35.Which company installed an indoor 15kv, 600A static transfer switch at industrial park in Columbus [ ]
A) American electric power B) Edison company
C) texas company D)none

36. UPQC is a combination of [ ]
A) SSSC,STATCOM B) TCR,TSR
B)TCSC,TSSS D) TCSC,SSSC

37. STATCOM generates/absorbs the _____ [ ]
A)Real power B) acive poweRe C) Both (A)&(B) D)None

38. Which of the following device is more preferable for FACTS technology [ ]
A)CSC B)VSC C)Both(A)&(B) D)None

39. Which of the following device is more preferable for storage in FACTS technology [ ]
A) Capacitors B)Inductors C)Batteries D)Super conducting magnets

40. The effective transmission impedance X_{eff} with the series capacitive compensation [ ]
A) X-Xc B) X+Xc C) X/Xc D) None

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