University of Mumbai

QUESTION BANK

DMAES

Examination: BE Semester VIII

Course Code:

EEC801 and Course Name: **Design, Management and Auditing of Electrical System**

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MCQ

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Maximum demand controller is used to
Option A:	Switch off non-essential loads in a logical sequence
Option B:	Switch off essential loads in a logical sequence
Option C:	Controls the power factor of the plant
Option D:	Controls the power consumption
2.	A switchgear is a device used for
Option A:	interrupting an electric circuit
Option B:	switching an electric circuit
Option C:	switching and controlling an electric circuit
Option D:	switching, controlling and protecting the electric circuit and equipment
3.	Phase Advancers are used to improve the p.f. of
Option A:	Induction motor
Option B:	Induction Generator
Option C:	Synchronous motor
Option D:	Synchronous Generator
4.	Energy conservation act was formed in the year
Option A:	1998
Option B:	1999
Option C:	2000
Option D:	2001
5.	Lux meter is used to measure
Option A:	Illumination level
Option B:	Sound intensity and illumination level
Option C:	Harmonics
Option D:	Speed
6.	Which type of distribution is preferred in residential areas
Option A:	Single phase, two wire
Option B:	Three phase, three wire
Option C:	Three phase, four wire

Option D:	Two phase, four wire
7.	Which of the voltage is not available for Indian distribution system?
Option A:	33 kV
Option B:	11 kV
Option C:	280V
Option D:	433 V
8.	Why are the boosters inserted in the circuit?
Option A:	Reduce current
Option B:	Increase current
Option C:	Reduce voltage drop
Option D:	Compensate for voltage drop
9.	To draw a CUSUM chart following data is required
Option A:	Monthly energy consumption& monthly production
Option B:	Monthly specific energy consumption and turn over
Option C:	Monthly profits and production
Option D:	Monthly waste and losses
10.	Energy manger should be well versed with
Option A:	Manufacturing and processing skills
Option B:	Managerial and technical skills
Option C:	Technical and marketing skills
Option D:	Managerial and commercial skills
11.	Infrared thermometer is used to measure
Option A:	Surface temperature
Option B:	Flame temperature
Option C:	Flue gas temperature
Option D:	Hot water temperature
12.	In order to improve the power factor of equipment operating at lagging p.f., a capacitor is connected
Option A:	In series with the equipment
Option B:	In parallel with the equipment
Option C:	In series-parallel with the equipment
Option D:	either in series or in parallel
13.	Electronic variable frequency drive (VFD) connected to motors
Option A:	provide variable speed with high efficiency
Option B:	induces eddy-current in the secondary member of the clutch mechanism
Option C:	is not suitable for variable torque load

Option D:	does not provide variable speed and has low-efficiency
14.	Occupancy sensors is well suited for
Option A:	day light based controllers
Option B:	night based controllers
Option C:	motor controllers
Option D:	movement or noise detector in room space
15.	Electronic soft starters are used for motors to
Option A:	achieve variable speed
Option B:	provide smooth start and stop
Option C:	improve the loading
Option D:	Reduce losses
16.	Select the location of installing capacitor bank, which will reduce the electricity distribution losses to the maximum extent
Option A:	Main sub-station bus bars
Option B:	Motor terminals
Option C:	Motor control centre
Option D:	Distribution board bus bars
17.	The power factor of an induction motor
Option A:	increases with increase in motor loading
Option B:	decreases with increase in motor loading
Option C:	is independent of motor loading
Option D:	decreases with decrease in motor loading
18.	In the stages of Tendering Process, which one is the first stage?
Option A:	Selection Stage
Option B:	Evaluation
Option C:	Advertising the requirement
Option D:	Award of contract
19.	Following is not a role of Electrical Engineer in Electrical projects
Option A:	Design Engineer
Option B:	Project Engineer
Option C:	Maintenance Engineer
Option D:	Software Engineer
20.	The name plate of distribution transformer has the following information except?
Option A:	Vector Group
Option B:	Voltage rating
Option C:	Current Rating
Option D:	Transformer Grounding Resistance Value
21.	In distribution system design calculation, future estimates is the estimation of ?
Option A:	Load
Option B:	Manpower
Option C:	Furniture
Option D:	Manpower and Furniture

22.	Following derating factor need to apply during the design of cable, if the cable is running through special thermal insulation of size greater than 600mm thickness
Option A:	Thermal Insulation Factor
Option B:	Ambient correction factor
Option C:	Grouping Factor
Option D:	Fusing Factor
23.	If cable is to decide for the installation which has fault capacity of 20kA. Protection equipment operates in 10ms and k =115, then minimum size of the cable required is
Option A:	18.39sq.mm
Option B:	17.39sq.mm
Option C:	16.39sq.mm
Option D:	19.39 sq.mm
24.	What will be the number of lamps, each having 500 lumens, required to obtain an average illuminance of 250 lux on a 4m × 3m rectangular room? Ignore other parameters.
Option A:	8
Option B:	4
Option C:	6
Option D:	5
25.	Power factor improvement does not provide following to the commercial consumer
Option A:	Reduced kVA demand
Option B:	Reduced conductor size
Option C:	Reduction in electricity bill amount
Option D:	Increases active power supply to the load
26.	A 400W rated lamp was switched on for 10 hours per day. The supply volt is 230V (current= 2 amps & PF= 0.8). What is the energy consumption per day?
Option A:	3.68 kWh
Option B:	6.37 kWh
Option C:	0.37 kWh
Option D:	4.0 kWh
27.	_____is a statistical technique which determines and quantifies the relationship between variables and enables standard equations to be established for energy consumption.
Option A:	linear regression analysis
Option B:	time-dependent energy analysis
Option C:	moving annual total
Option D:	CUSUM
28.	Energy Audit is the key to a systematic approach for decision-making in the area of
Option A:	Time management
Option B:	Water management.
Option C:	Pollution management
Option D:	energy management

29.	Which of the following is not a part of energy audit as per the Energy Conservation Act, 2001?
Option A:	monitoring and analysis of energy use
Option B:	verification of energy use
Option C:	submission of technical report with recommendations
Option D:	ensuring implementation of recommended measures followed by review
30.	The instrument used to measure various gases such as O(2), CO, NO(2) and SO(X).
Option A:	Power analyzer
Option B:	Combustion Gas analyzer
Option C:	Fyrite
Option D:	Pyrometer
31.	Variable Speed drives operates on principle of
Option A:	Change in p.f.
Option B:	Change in Current
Option C:	Change in no. of poles
Option D:	Change in frequency
32.	Which of the following is not a advantage of BLDC motor over conventional DC motor.
Option A:	Less maintenance
Option B:	Long life
Option C:	No risk of explosion or possibility of RF radiation
Option D:	Low cost
33	Daylight integration into lighting system
Option A:	Will result into more number of lamps required
Option B:	Reduced energy consumption if used effectively
Option C:	Increased energy consumption
Option D:	Effect can't be determined
34.	What does illumination refer to?
Option A:	The wavelength used to generate light
Option B:	The ratio of light produced to energy consumed
Option C:	The color patterns used in lighting
Option D:	The distribution of light on a horizontal surface
35.	Following derating factor need to apply during the design of cable, if the ambient temperature is 40 degree celsius
Option A:	Thermal Insulation Factor
Option B:	Fusing Factor
Option C:	Ambient correction factor
Option D:	Grouping Factor
36.	Batteries are rated for
Option A:	Ampere hours
Option B:	Hours
Option C:	Ampere
Option D:	Weight

37.	HT cables are specified with_____ no of cores
Option A:	Four
Option B:	Three
Option C:	Two
Option D:	Three and half
38.	Which circuit breaker is not used in a downstream side (load side) of Secondary of a transformer?
Option A:	Moulded case circuit breaker
Option B:	Air circuit breaker
Option C:	SF6 circuit breaker
Option D:	Miniature circuit breaker
39.	Distribution of power is technically difficult if the feeder length is beyond
Option A:	800 km
Option B:	300 km
Option C:	35 to 45 km
Option D:	500 km
40.	Following is not the function of UPS system
Option A:	Online quality power supply
Option B:	Providing high frequency supply to the load
Option C:	Standby power supply
Option D:	Bypass mains
41.	If a system power factor is poor, then
Option A:	kWh energy drawn from the source increases
Option B:	kVARh energy drawn from the source increases and kVAh energy drawn from the source increases
Option C:	kVAh energy drawn from the source increases
Option D:	kVARh energy drawn from the source increases
42.	_____ is reduced by using thinner laminations for core construction of a transformer
Option A:	Hysteresis loss
Option B:	Eddy current losses
Option C:	Cannot be determined
Option D:	Copper losses
43.	Energy efficient transformer core is made up of _____.
Option A:	copper
Option B:	copper alloy
Option C:	amorphous core - metallic glass alloy
Option D:	silicon alloyed iron (grain oriented)
44.	_____ is the best way of correlating production and energy data in any plant
Option A:	Graphical representation
Option B:	database
Option C:	Text format
Option D:	Oral communication

45.	Single line diagram does not represents:
Option A:	Connected load to the feeders
Option B:	Delta connection of transformer winding
Option C:	Star connection of transformer winding
Option D:	Neutral wire of transmission lines
46.	The primary industry standard used in the electrical distribution network design is
Option A:	EASA
Option B:	IESNA
Option C:	NEC
Option D:	NEMAp
47.	Which of the following sequence of operation is correct for the operation of circuit breaker, isolator and earthing switch while closing a circuit
Option A:	Close CB – open erimaryarthing switch- close isolator
Option B:	Ensure CB is open-close isolator-open earthing switch-close circuit breaker
Option C:	Ensure CB is open -open earthing switch-close isolator -close circuit breaker
Option D:	open earthing switch -Close CB –close isolator
48.	The minimum dielectric stress in a LT cable is at
Option A:	conductor surface
Option B:	bedding
Option C:	Outer sheath
Option D:	Armour
49.	The meter constant of digital type single phase energy meter is expressed in terms of
Option A:	kW/kWh
Option B:	No of blinks /kWh
Option C:	Volts/kWh
Option D:	Amps/kW
50.	Some money is deposited along with the tender is called as security deposit or_____
Option A:	Equivalent Money Details
Option B:	Equal Money Deposit
Option C:	Earnest Money Deposit (EMD)
Option D:	Equited Money Deposit
51.	A load curve is a plot of
Option A:	Load versus cost of power
Option B:	Load versus generation capacity
Option C:	Load versus time
Option D:	Load versus current
52.	For the installation of P kW, if it is decided to improve the power factor from 0.8 to 0.93. Size of capacitor bank calculated as ____kVAr /kW
Option A:	0.405
Option B:	0.455
Option C:	0.355
Option D:	0.255

53.	_____in a transformer is zero even at full load
Option A:	Core loss
Option B:	Eddy current loss
Option C:	Hysteresis loss
Option D:	Friction loss
54.	Which of the following represents the annual average load?
Option A:	{(KWh supplied in a day)/ 24 } × 365
Option B:	{(KWh supplied in a month)/(30 x 24)
Option C:	(KWh supplied in a day)/24
Option D:	(KWh supplied in a year) / (24 × 365)

DESCRIPTIVE QUESTIONS

10 marks Questions	
1.	List the types of power distribution system. Illustrate anyone in detail.
2.	Illustrate the need of UPS. What are the types of UPS? Illustrate the suitability of each with the help of suitable examples.
3.	Explain energy saving opportunities in fans and blowers.
4.	Discuss the design features of Switchboard.
5.	Discuss various energy efficient technologies used to improve performance of motor.
6.	Explain design consideration in transformer selection, sizing and specifications.
7.	What are the different types of electrical projects?
8.	What are the typical billing components of HT billing?
5 marks Questions	
1.	Why power factor improvement is necessary for industries?
2.	Explain Discrimination and co-ordination in terms of Protection System Design.
3.	Write a short note on Building Management System.
4.	Illustrate advantages of bus bar system in comparison with a cable system.
5.	Write a short note on Variable Speed Drive.
6.	Discuss the importance of electrical drawing/ plan with example.
7.	Explain the temporary power supply.
8.	Explain any one substation equipment and design consideration of substation equipment while designing.
9.	Write short note on CUSUM technique.
10.	Discuss the various elements of Monitoring and Targeting in energy management.
11.	What are the factors are to be considered while selection and installation of DG set?
12.	Explain main features of Energy Conservation Act 2001.
13.	Explain different types and selection criteria of UPS.