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DEPARTMENT OF ELECTRICAL ENGINEERING

THIRD YEAR (TY)

SCHEME: I **SEMESTER: V**

NAME OF SUBJECT: ENERGY CONSERVATION & AUDIT

Subject Code: 22525

UNIT WISE MULTIPLE CHOICE QUESTIONS BANK

Question Bank for Multiple Choice Questions

Program: Diploma in Electrical engineering	**Program Code:- EE**
Scheme:-I	**Semester:- 5**
Course:- Energy Conservation	**Course Code:- 22525**
01 – Basic of energy conservation	**Marks:-08**

Content of Chapter:-

1.1 Energy scenario, Types of energy source.
1.2 Energy conservation & energy audit concept difference. Energy conservation act 2001.
1.3 BEE and its role
1.4 MEDA and its role
1.5 Star labeling : Need and its benefit

(1)The modal agency for coordinating the energy conservation activities under EC act in India is....
(A) bureau of Indian standards (b) bureau of energy efficiency
(c) Bureau of energy education (d) bureau of energy and environment
Ans - b) bureau of energy efficiency

(2)The object of energy management is....
(a) To minimize energy cost (b) to minimize environmental effects
(c) A & c (d) none of the above
Ans- (c) A & c

(3)Which of the following is used to represent energy balance of a system?
(a) Snaky diagram (b) flow chart
(c) Single lines diagram **(d) block diagram**
Ans-(a) Snaky diagram

(4)Energy available in fuel is stored as...
(a) Heat energy (b) chemical energy
(c) Atomic energy (d) explosive energy
Ans-(b) chemical energy

(5)Which one is the key element for successful energy management?
(A) Top management support (b) planning
(c) Monitoring (d) training
Ans- b) planning

(6)The essential element of monitoring and targeting system is...
(a) Recording (b) reporting
(c) Controlling (d) all the above
Ans- (d) all the above

(7)"The judicious and effective of energy to maximise profits and enhance competitive position "this can be the definition of

(A) Energy conservation (b) energy management
(c) Energy policy (d) energy audit
Ans- b) energy management

(8) The objective of energy management includes

(a) Minimising energy costs (b) minimising waste
(c) Minimising environmental de graduation (d) all the above
Ans-(d) all the above

(09)Which fuel dominates the energy mix in Indian energy scenario ?

(a)oil (b)natural gas
(c)coal (d)nuclear
Ans- d)nuclear

(10)Indian per capita energy consumption is..... of the world average.

(a)4% (b)20%
(c)1% (d)10%
Ans- b)20%

(11)Providing information to BEE is the role of energy manager a per

(a)energy conservation act 2003 (b) energy conservation act 2004
(c) energy conservation act 2002 (d)energy conservation act 2001
Ans- d) energy conservation act 2001

(12) Which of the following is a non-renewable resource?

(a) Coal (b) Forests
(c) Water (d) Oil
Ans- b) Forests

(13)The energy sources that are either found or stored in nature are

a) Secondary Energy Sources b) Primary Energy Sources
c) both (a) and (b) d) none of the above
Ans- b) Primary Energy Sources

(14) Natural Gas contains ?

a) 95-99% methane b) 95-99% Ethane
c) methane & ethane mix d) None
Ans- a) 95-99% methane

(15) Inexhaustible energy sources are known as

a) commercial Energy b) renewable Energy
c) primary energy d) secondary energy
Ans- b) renewable Energy

(16)The percentage of energy saved at the current rate of use, compared to the reference year rate of use, is called

a) Energy Utilization b) Energy Performance
c) Energy Efficiency d) None
Ans- a) Energy Efficiency

(17) The various types of the instruments, which requires during audit need to be

a) Easy to carry
b) Easy to operate
c) Inexpensive
d) All (a) to (c)

Ans: d) All (a) to (c)

(18) Which of the following is commercial energy source?

a) Electricity
b) Coal
c) Oil
d) All the above

Ans- d) All (a) to (c)

(19) Inexhaustible energy sources are known as

a) commercial Energy
b) renewable Energy
c) primary energy
d) secondary energy

Ans- b) renewable Energy

(20)Energy consumption per unit of GDP is called as:

a) Energy Ratio
b) Energy intensity
c) Per capita consumption
d) None

Ans- b) Energy intensity

(21)The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected there with is?

a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2005
d) Indian Electricity Act 2003

Ans- b) Energy Conservation Act 2001

(22) Which of the following is an example of Renewable Energy source?

a)Coal
b) Petrol
c) LPG
d) Wind

Ans a) Coal

(23) Energy can neither be created nor destroyed implies

a) Energy is converted from one form to another form
b) Energy is created only by burning fuel
c) Energy is converted from one form to other
d) Energy is only available in form of heat.

Ans- a) Energy is converted from one form to another form

(24)Coal is a fossil fuel and it cannot be created in a laboratory or industry because the formation of coal:

a) Is a very slow process
b) needs very low pressure and temperature
c) causes air pollution
d) needs very high pressure and temperature

Ans- c) causes air pollution

(25) B.E.E stands for

(a) Board of energy efficiency
(b) Bureau of energy efficiency
(c) Branch of energy efficiency
(d) None of these

Ans- b) Bureau of energy efficiency

(26) Salient feature of Energy Conservation Act 2001 is

(a) establishment of BEE
(b) to prescribe energy conservation building codes for all buildings
(c) to specify energy consumption standard
(d) both (a) & (c)

Ans-(d) both (a) & (c)

(27) The Act which is proposed to bring the qualitative transformation of the electricity sector is

(a) Regulatory Commission Act b) Indian Electricity Act, 1910

(c) Electricity Act, 2003 (d) Supply Act, 1948

Ans- c) Electricity Act, 2003

(28)Which of the following is a disadvantage of most of the renewable energy sources?

(a) Highly polluting (b) High waste disposal cost

(c) Unreliable supply (d) High running cost

Ans- c) Electricity Act, 2003

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Question Bank for Multiple Choice Questions

Program: Diploma in Electrical engineering	**Program Code:- EE**
Scheme:-V	**Semester:- 5**
Course:- Energy Conservation & Audit	**Course Code:- 22525**

02 – Energy Conservation In Electrical Machines	**Marks:-014**

Content of Chapter:-

2.1 Need of energy conservation in induction motor & transformer.
2.2 Energy conservation technique in induction motor.
2.3 Energy conservation technique transformer
2.4 Energy conservation equipment
2.5 Energy efficient motor
2.6 Energy efficient transformer

1. **Maximum demand controller is used to _____.**
   a) Switch off essential loads in a logical sequence
   b) Exceed the demand of the plant
   c) Switch off non-essential loads in a logical sequence
   d) Controls the power factor of the plant
   Ans- c) Switch off non-essential loads in a logical sequence

2. **Capacitors with automatic power factor controller when installed in a plant:**
   a) Reduces active power drawn from grid
   b) Reduces the reactive power drawn from grid
   c) Reduces the voltage of the plant
   d) Increases the load current of the plant
   Ans- b) Reduces the reactive power drawn from grid

3. **_____ controls the power factor of the installation by giving signals to switch on or off power factor correction capacitors.**

   a) KVAR
   b) Automatic power factor control relay
   c) Intelligent power factor controller
   d) Maximum demand controller
   Ans- b) Automatic power factor control relay

4. **_____ determines the rating of capacitance connected in each step during the first hour of its operation and stores them in memory.**
   a) Maximum demand controller
   b) Intelligent power factor controller
   c) Automatic power factor controller
   d) KVAR
   Ans- b) Automatic power factor control relay

5. **Energy efficient transformer core is made up of _____.**
   a) Silicon alloyed iron (grain oriented)
   b) Copper
   c) Amorphous core - metallic glass alloy
   d) none of the above
   Ans- c) Amorphous core - metallic glass alloy

6. **The basic functions of electronic ballast exclude one of the following**:
   a) to ignite the lamp
   b) to stabilize the gas discharge
   c) to reduce lumen output of the lamp
   d) all of these
   Ans- d) all of these

7. **Select the application of fluid coupling fitting from the following**:
   a) acts as a voltage limiter
   b) enables no-load start-up of prime-mover
   c) works on the principle of eddy current
   d) none of the above
   Ans- b) enables no-load start-up of prime-mover

8. **The characteristic of conventional ballast in lighting application is one among the following:**
   a) They have low operational losses than electronic ballasts.
   b) They have tuned circuit to deliver power at 25 Hz
   c) They do not require a mechanical switch (starter)
   d) They have high operational losses and high temperature rise
   Ans- a) They have low operational losses than electronic ballasts.

9. **Application of occupancy sensors is well suited for ___.**
   a) day light based controllers
   b) night based controllers
   c) light controllers
   d) movement or noise detector in room space
   Ans- c) light controllers

10. **The following function cannot be achieved with automatic power factor controllers**.
    a) Voltage control
    b) KILOVAR control
    c) kW control
    d) PF control
    Ans- c) kW control

11. **State whether the two statements are True or False?**
    The following features apply to energy efficient motors by design:
    a) Energy efficient motors last longer
    b) Starting torque for efficient motors may be lower than for standard motors
    Ans- True

12. Eddy current drive can be a retrofit for _____.

a) Constant speed system requirement
b) Variable speed system requirement
c) Dual speed system requirement only
d) None of the above
Ans- b) Variable speed system requirement

13. Electronic variable frequency drive (VFD) connected to motors:

a) Provide variable speed with high efficiency
b) induces eddy-current in the secondary member of the clutch mechanism
c) is not suitable for variable torque load
d) Does not provide variable speed and has low-efficiency
Ans- a) Provide variable speed with high efficiency

14. Variable speed cannot be obtained with ____.

a) DC motors controller
b) AC motor controller
c) Soft starter controller
d) AC & DC controllers
Ans- c) Soft starter controller

15. Energy savings potential of variable torque applications compared to constant torque application is:

a) Higher
b) Lower
c) Equal
d) None of the abov**e**
Ans- a) Higher

16. Electronic soft starters are used for motors to:

a) achieve variable speed
b) provide smooth start and stop
c) improve the loading
d) none of the above
Ans- b) provide smooth start and stop

17. Energy efficient lighting can be planned by using the following retrofits. – State True or False

a) photo-sensor
b) timer
c) occupancy sensor
d) localized switching
Ans- c) occupancy sensor

18. What is power factor?

a) kw/kva
b) kw/kvar
c) kva/kvar
d) none of above
Ans-(a) kw/kva

19. What is unit of illumination?

a) lux
b) candle power
c)lumen
d)lumens/watt
Ans-a) lux

20. Which one the factors affecting motor performance?

a) efficiency
b) nature of load
c) i/p supply
d) losses
Ans- d) losses

21. Which method is used to PF?

a)Swinburne test
b)direct loading test
c)using static capacitor test
d)all of these
Ans- c) using static capacitor test

22. What is unit of active power?

a) kw
b)volt
c)kva
d)kvar
Ans- (a) kw

23. Give the wattage & lumen for T8 tube.

a) 40/2450
b) 36/3250
c) 28/2900
d) 24/2550
Ans- a) 40/2450

24. What is full form of VFD.

a) voltage frequency drive
b) variable fan drive
c) voltage fan drive
d)variable frequency drive
Ans- d)variable frequency drive

25. Which types of lamp saves maximum power?

a) CFL
b) carbon filament
c) neon lamp
d)LED
Ans- d

26. Which motor is more efficient?

a) universal motor
b) induction motor
c) E.E.M
d)D.C motor
Ans- c) EEM

27. What is the general life hours of 5 to 23 w CFL in hour?

a) 5000
b) 10000
c) 2000
d) 1000
Ans- a) 5000 hour

28. In a transformer, the magnitude of the mutual flux is

a) High at low loads and low at high loads
b) Low at low loads and low at high loads
c) Varies at low loads and constant at high loads
d) Same at all loads
Ans: d) Same at all loads

29. Use of higher flux density in trans-former design

a) Increases the weight per kW
b) Increases the weight per kVA
c) Decreases the weight per kVA
d) Decreases the weight per kW
Ans: c) Decreases the weight per kVA

30. The efficiency of transformer compared with that of electric motors of the same rating is

a) About the same
b) Much higher
c) Much smaller
d) Slightly higher
Ans: b) Much higher

31. Distribution transformers are designed to have maximum efficiency at about

a) Full load
b) No load
c) 50% of full load
d) 75% of full load
Ans: d) 75% of full load

32. Use of silicon steel for laminations in a transformer reduces

a) Eddy current losses
b) Hysteresis losses
c) Both eddy current and hysteresis losses
d) Noise generated in the transformer
Ans: a) Eddy current losses

33. Special silicon steel is used for the laminations of transformer, because it has

a) High resistivity and high hysteresis loss
b) High resistivity and low hysteresis loss
c) Low resistivity and high hysteresis loss
d) Low resistivity and low hysteresis loss

Ans: b) High resistivity and low hysteresis loss

34. The commercial efficiency of a transformer while on open circuit is

a) Zero
b) 100%
c) 50%
d) None of these

Ans: a) Zero

35. The direction of the central phase winding of a three-phase shell type transformer is reversed with respect to the outer phases to

a) Save considerable amount of core material
b) Reduce short circuit forces
c) Reduce leakage flux
d) Minimize eddy current loss

Ans: a) Save considerable amount of core material

36. In a transformer, spiral winding is suitable only for windings

a) Rated for high voltage
b) Rated for low voltage
c) Carrying very high current
d) Carrying very low current

Ans: c) Carrying very high current

37. In a transformer, continuous disc winding is suitable for

a) High voltage winding of small trans-formers
b) Low voltage winding of small trans-formers
c) High voltage winding of large trans-formers
d) Low voltage winding of large trans-formers

Ans: c) High voltage winding of large trans-formers

38. For transformation ration k, the transformer secondary impedance has to be multiplied by the following factor to get its equivalent primary impedance

a) K
b) 1/k
c) k^2
d) $1/k^2$

Ans: c) k^2

39. The magnetic flux in a transformer follows a path of

a) Low reluctance
b) High conductivity
c) High reluctance
d) Low conductivity

Ans: a)) Low reluctance

40. Use of higher flux density in trans-former design

a) Increases the weight/kVA
b) Decreases the weight/kVA
c) Reduces iron losses
d) Improves insulation

Ans: b) Decreases the weight/kVA

41. A transformer is connected to a constant voltage supply. As the supply frequency increases, the magnetic flux in the core

a) Decreases
b) Increases toward saturation
c) Becomes zero
d) Becomes constant

Ans: b) Increases toward saturation

42. Circular coil sections are generally used in transformer because they

a) Have the toughest mechanical shape
b) Are easy to wound
c) Reduce copper losses
d) Reduce iron losses

Ans: a) Have the toughest mechanical shape

43. Good transformer oil should contain water less than

a) 4 ppm
b) 8 ppm
c) 12 ppm
d) 20 ppm

Ans: **b) 8 ppm**

44. Stepped core limbs are used to

a) Reduce copper material and copper losses
b) Reduce iron material and iron losses
c) Both (a) and (b)
d) Increase mechanical strength of the **core**

Ans: a) Reduce copper material and copper losses

45. If power factor is less than unity then it will result in

a) Large kVA rating of equipment
b) Greater conductor size
c) Large copper losses
d) all of these

Ans: **d) all of these**

46. Power factor of a load can be improved by using

a) Static capacitors
b) Synchronous condenser
c) Phase advancer
d) all of above

Ans: **d) all of above**

47. Phase advancers are used to improve the power factor of

a) Induction motors
b) Induction generators
c) Synchronous motors
d) Synchronous generators

Ans: **a) Induction motors**

48. Large air gap in an induction motor results in

a) Reduced noise
b) Reduced pulsation losses
c) Better cooling
d) Increased overload capacity

Ans: b) Reduced pulsation losses

49. The power factor of star connected induction motor is 0.5. On being connected in delta, the power factor will?

a) Increase
b) Reduce
c) Remain the same
d) Become zero

Ans: b) Reduce

50. Simplest method of eliminating the harmonic induction torque is

a) Integral slot winding
b) Chording
c) Skewing
d) None of these

Ans: b) Chording

51. Any odd harmonic in the current of an induction motor will result in magnetic field which

a) Is stationary relative to the field of the fundamental
b) Rotates in forward direction at the harmonic speed
c) Rotates in backward direction
d) Oscillates at harmonic frequency

Ans: c) Rotates in backward direction

52. The drive generally used for lathe machines are

a) Dc shunt motors
b) Slip ring induction motors
c) Synchronous motors
d) Squirrel cage induction motors

Ans: d) Squirrel cage induction motors

53. Cogging of motor implies that motor

a) Refuses to start at load
b) Refuses to start at no load
c) Runs at low speed and then stops
d) Runs at very low speed

Ans: b) Refuses to start at no load

54. Transformer core is generally made of _____.

a) Single block of core material
b) By stacking large number of sheets together
c) Can be made with any of the above method
d) Cannot be determined
Ans: b) By stacking large number of sheets together

55. Transformer core is constructed for _____.

a) Providing least effective magnetic linkage between two windings
b) Providing isolation between magnetic linkages of one coil from another
c) Providing most effective magnetic linkage between two windings
d) Cannot be determined
Ans: c) Providing most effective magnetic linkage between two windings

56. Which of the following statements is/are correct?

a) High frequency power supplies are light weight
b) Transformer size gets reduced at high frequency
c) Transformer size is more at higher frequency
d) High frequency power supplies are light weight and transformer size gets reduced at high frequency
Ans: d) High frequency power supplies are light weight and transformer size gets reduced at high frequency

57. Transformer windings are tapped in the middle because

a) It eliminates axial forces on the windings
b) It eliminates radial forces on the windings
c) It reduces insulation requirement
d) None of these
Ans: a) It eliminates axial forces on the windings

58. Which of the following materials is used to absorb moisture from air entering the transformer ?

a) Silica sand
b) Silical gel
c) Felt pad
d) Sodium chloride
Ans: b) Silical gel

59. Transformer ratings are usually expressed in terms of

a) Voltage
b) KVA
c) KWh
d) KW
Ans: b) KVA

60. The noise in transformer due to vibration of laminations set by magnetic forces, is called

a) Flicker noise
b) Transit-time noise
c) Agitation noise
d) Humming noise
Ans: d) Humming noise

61. The maximum load that a power transformer can carry is limited by its

a) Voltage ratio
b) Copper loss
c) Temperature noise
d) Dielectric strength of oil

Ans: a) Voltage ratio

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Question Bank for Multiple Choice Questions

Program: Diploma in Electrical engineering	**Program Code:- EE**
Scheme:-V	**Semester:- 5**
Course:- Energy Conservation & Audit	**Course Code:- 22525**

03 – Energy Conservation In Electrical installation system	**Marks:-014**

Content of Chapter:-
3.1 Aggregated Technical Commercial Losses At State National Level.
3.2 Technical Losses Causes Measure To Reduce By Various Method.
3.3 Commercial Losses Losses Causes Measure To Reduce By Various Method.
3.4energy Conservation Equipment.
3.5 Energy Conservation In Lighting System.
3.6 Energy Conservation Technique In Fan

1. Wavelength for blue color
(A) 4400 A
(B) 5250 A
(C) 6150 A
(D) 5950 A.
Ans -4400 A

2. Radio interference from a fluorescent lamp can be reduced by
(A) putting two lamps in parallel
(B) eliminating choke
(C) putting a capacitor across the lamp
(D) none of the above.
Ans- c) Putting a capacitor across the lamp

3. Dimming systems for lights are used in
(A) theatres
(B) auditoriums
(C) ball room
(D) all of the above.
Ans-d) all of the above.

4. Which of the following can be used as a light dimming device ?
(A) Auto transformer
(B) Variable reaction
(C) SCR
(D) Any of the above.
Ans-(D) Any of the above.

5. Which of the following is difficult to adopt for dimming ?
(A) GLS lamps
(B) Cold cathode lamps
(C) Fluorescent lamps
(D) All of the above.
Ans-(D) Any of the above.

6. Heat from light source is particularly of importance while
(A) designing for illumination level
(B) designing for floor space utilization
(C) designing for air conditioning
(D) all of the above
Ans-(C) designing for air conditioning

7. In electric discharge lamps for stablizing the arc
(A) a condenser is connected in parallel to supply
(B) a condenser is connected in series to supply
(C) a variable resistor is connected in the circuit
(D) a reactive choke is connected in series with supply.
Ans -(C) a variable resistor is connected in the circuit

8. The lens of the eye to focuses an image on the
(A) corona
(B) membrane
(C) calorie
(D) retina.
Ans-(D) retina.

9. The sensors in the eye arc known as
(A) rods and cones
(B) wires and nerves
(C) retina and antenna
(D) high and low.
Ans- (C) retina and antenna

10. Standard wattage of 3 ft. fluorescent tube is
(A) 10 W
(B) 40 W
(C) 65 W
(D) 100 W.
Ans-(B) 40 W

11. For the same wastage which lamp is cheapest ?
(A) Sodium vapor lamp
(B) Mercury vapor lamp
(C) Fluorescent tube
(D) GLS lamps.
Ans-(D) GLS lamps

12. Optical instruments used for the comparison of candle powers of different sources arc known as
(A) Candle meters
(B) Radio meters
(C) Bunsen meter
(D) Pho
Ans- (D) GLS lamps to meter

13. Which photometer is used for comparing the lights of different colors ?
(A) Bunson photometer
(B) Grease spot photometer
(C) Lummer Brodhum photometer
(D) Guilds Flicker Photometer.
Ans - (C) Lummer Brodhum photometer

14. Which photometer depends for its operation on Lambert's cosine law?
(A) Macbeth Illumino meter
(B) Trotter Illumination Photometer
(C) Lummer Brodhum Photometer
(C) Guild's Flicker Photometer.
Ans- (C) Guild's Flicker Photometer.

15. Which photometer depends for its operation on Inverse Square Law?
(A) Guilds Flicker Photometer
(B) Lummer Brodhum Photometer
(C) Macbeth Illuminometer
(D) Trotter Illumination Photometer.
Answer -(C) Macbeth Illuminometer

16. The color temperature of day light is around
(A) 50 K
(B) 160 K
(C) 600 K
(D) 6000 K.
Answer-(D) 6000 K.

17. Light is produced in electric discharge lamps by
(A) heating effect of current
(B) magnetic effect of current
(C) ionization in a gas or vapor
(D) carbon electrodes.
Answer- (C) ionization in a gas or vapor

18. Lumen/watt is the unit of
(A) Light flux
(B) Luminous intensity
(C) Brightness
(D) Luminous efficiency.
Answer- (D) Luminous efficiency.

19. Candela is-the unit for
(A) Light flux
(B) Luminous intensity
(C) Brightness
(D) Luminous efficiency.
Answer-(B) Luminous intensity

20. Which gas is sometimes used in filament lamps ?
(A) Argon
(B) Krypton
(C) Nitrogen
(D) Carbon dioxide
Answer- (A) Argon

21. Which bulb operates on lowest power ?
(A) Night bulb
(B) Neon bulb
(C) GLS bulb
(D) Torch bulb.
Answer- (D) Torch bulb.

22. The output of a tungsten filament lamp depends on
(A) size of lamp
(B) size of shell
(C) temperature of filament
(D) all of the above.
Answer-(C) temperature of filament

23. A zero watt lamp consumes
(A) no power
(B) about 5 to 7 W power
(C) about 15 to W power
(D) about 25 to 30 W power
Answer-(B) about 5 to 7 W power

24.Melting temperature of tungsten is
(A) 2000°K
(B) 2500°K
(C)2655°K
(D) 3655°K.
Answer-(D) 3655°K.

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Question Bank for Multiple Choice Questions

Program: Diploma in Electrical engineering	**Program Code:- EE**
Scheme:-V	**Semester:- 5**
Course:- Energy Conservation & Audit	**Course Code:- 22525**

04 – Energy Conservation In Cogeneration & tariff	**Marks:-014**

Content of Chapter:-

4.1. Cogeneration and tariff concept significance for energy conservation.
4.2. Cogeneration
a) Types of cogeneration on basis of sequence of energy use.
b) Types of cogeneration on basis of technology.
c) Factor governing selection of cogeneration system.
d) Advantages of cogeneration.
4.3 .Types of tariff structure.
4.4 .Application of tariff system to reduce energy bill

Q1. What is the difference between two part tariff and maximum demand tariff?
a. A separate meter is used.
b. A separate maximum demand meter is used.
c. Semi fixed charges are also included.
d. All of these
ANSWER: b. A separate maximum demand meter is used.

Q2. This tariff is applied for which kind of consumers?
a. Big consumers.
b. Small consumers.
c. Residential consumers.
d. All of these.
ANSWER: a. Big consumers.

Q3. Why is this tariff not applicable to domestic consumers?
a. Low maximum demand.
b. Low load factor.
c. Lower energy consumption.
d. Low power factor.
ANSWER: a. Low maximum demand.

Q4. Why is a big consumer charged at a lower rate than the small consumer?
a. Their maximum demand is small.
b. It improves the load factor.
c. Both (a) and (b).
d. None of these.
ANSWER: b. It improves the load factor.

Q5. What is the power factor tariff?
a. It considers only maximum demand.
b. It considers only semi fixed charges and the power factor.
c. It considers only power factor.
d. It considers the load factor.
ANSWER: c. It considers only power factor.

Q6. What is consequence of low power factor?
a. Increases the rating of station equipments only.
b. Only line losses increases.
c. Both (a) and (b).
d. Neither of these.
ANSWER: c. Both (a) and (b).

Q7. A consumer having lower power factor contributes towards which factor?
a. Semi fixed charges.
b. Fixed charges.
c. Running charges.
d. Penalty is imposed.
ANSWER: b. Fixed charges.

Q8. Which tariff is also known as the average power factor tariff?
a. Sliding scale tariff.
b. kW tariff.
c. kVAR tariff.
d. kVA maximum demand tariff.
ANSWER: a. Sliding scale tariff.

Q9. What is maximum value of power factor?
a. 0.5
b. 1
c. 1.5
d. 0.95
ANSWER: b. 1

Q10. Active power and apparent power are respectively represented by?
a. kW and kVAR
b. kVAR and kVA
c. kVA and kVAR
d. kW and kVA
ANSWER: d. kW and kVA

Q11. Which among the following happens in a low power factor?
a. Large kVA rating of the equipment.
b. Greater conductor size.
c. Reduced handling capacity of the system.
d. All of the above.
ANSWER: d. All of the above.

Q12. Lower power factor is usually not due to
a. Discharge lamp.
b. Arc lamps.
c. Incandescent lamps.
d. Induction furnace.
ANSWER: c. Incandescent lamps.

Q13. For a consumer what is the most economical power factor?
a. 0.25 – 0.5 lagging
b. 0.25 – 0.5 leading.
c. 0.85 – 0.95 lagging.
d. 0.85 – 0.95 leading.
ANSWER: c. 0.85 – 0.95 lagging.

Q14. The primary reason for the low power factor is due to the installation of
a. Induction motors
b. DC motors
c. Synchronous motors.
d. Commutator motors.
ANSWER: a. Induction motors

Q15. For which among the following consumers is penalty imposed for low power factor?
a. Residential and commercial consumers.
b. Industrial consumers.
c. Agricultural consumers.
d. All of the above.
ANSWER: b. Industrial consumers.

Q16. Power factor can be improved by connecting which among these?
a. Static capacitors.
b. Resistors.
c. Synchronous condensers.
d. Both (a) and (c).
ANSWER: d. Both (a) and (c).

Q17. What is the advantage of the static capacitors?
a. Low losses.
b. Easy installation.
c. Lower maintenance.
d. All of the above.
ANSWER: d. All of the above.

Q18. Which among these is the advantage of synchronous condensers?
a. Helps in achieving the stepless control of power factor.
b. The motor windings have a lower thermal stability.
c. The maintenance cost is low.
d. All of the above.
ANSWER: a. Helps in achieving the stepless control of power factor.

Q19. Phase advancers are used for which among the following machines?
a. Transformers
b. Synchronous machines.
c. Induction motors.
d. DC machines.
ANSWER: c. Induction motors.

Q20. What is the main disadvantage of phase advancers?
a. Cannot be used for motors below 200 H.P
b. Produces noise.
c. Can be used where synchronous motor is un admissible.
d. None of these.
ANSWER: a. Cannot be used for motors below 200 H.P

Q21. The most suitable location for the power factor improvement device is
a. Near the electrical appliance which is responsible for the poor power factor.
b. At the sending end.
c. At the receiving end in case of transmission lines.
d. Both (a) and (c).
ANSWER: d. Both (a) and (c)

Q 22. Which of following is correct statement about Simple tariff?
a) Has no discrimination of consumers
b) Charges more to commercial users
c) Enoourages use of electricity
d) Is most commonly used tariff method
ANSWER: Has no discrimination of consumers

Q 23 The tariff in which power factor is taken as reference:
a. Sliding scale tariff
b. kVA maximum demand tariff
c. kW and kVAR tariff
d. All of these
Answer: d. All of these

Q 24. Two part tariff is charged on what basis?
a. Connected load
b. Units consumed.
c. Maximum demand.
d. Both (b) and (c).
ANSWER: d. Both (b) and (c).

Q 25. Fixed charge is dependent on what factor?
a. Energy consumption
b. Maximum demand
c. Peak load demand
d. All of the above
ANSWER: b. Maximum demand

Q 26. A variable charge is based on what?
a. Energy consumption
b. Maximum demand
c. Peak load demand
d. All of the above.
ANSWER: a. Energy consumption

Q27. What is the main disadvantage of two port tariff?
a. He has to pay semi fixed charges.
b. He has to pay fixed charges.
c. He has to pay running charges.
d. None of the above.
ANSWER: b. He has to pay fixed charges.

Q 28. What all are included in the three part tariff?
i. Fixed charges
ii. Running charges
iii. Semi fixed charges.
a. i, ii and iii
b. i and ii
c. i and iii
d. ii and iii.
ANSWER: a. i, ii and iii

Q 29. The most ideal tariff for the consumer is which tariff?

a. Two part tariff.
b. Three part tariff.
c. Both (a) and (b).
d. None of the above.
ANSWER: b. Three part tariff.

Q 30. What is the difference between two part tariff and maximum demand tariff?
a. A separate meter is used.
b. A separate maximum demand meter is used.
c. Semi fixed charges are also included.
d. All of these.
ANSWER: b. A separate maximum demand meter is used.

Q 31. This tariff is applied for which kind of consumers?
a. Big consumers.
b. Small consumers.
c. Residential consumers.
d. All of these.
ANSWER: a. Big consumers.

Q32. Why is this tariff not applicable to domestic consumers?
a. Low maximum demand.
b. Low load factor.
c. Lower energy consumption.
d. Low power factor.
ANSWER: a. Low maximum demand.

Q 33. Why is a big consumer charged at a lower rate than the small consumer?
a. Their maximum demand is small.
b. It improves the load factor.
c. Both (a) and (b).
d. None of these.
ANSWER: b. It improves the load factor.

Q 34. Having two separate units for process heat and power is?
a) useful
b) useless
c) pollution reducing
d) none of the mentioned
Answer: b.

Q 35. A plant producing both, electrical power & process heat simultaneously is?
a) Cogenital plant
b) Cogenerial plant
c) Cogeneration plant
d) Conglomerate plant.
Answer: c

Q 36. In a back pressure turbine _____
a) pressure at the exhaust from the turbine is the saturation pressure corresponding to the temperature desired in the process
b) pressure at the entrance of the turbine is the saturation pressure corresponding to the temperature desired in the process
c) pressure at the exhaust from the turbine is the saturation pressure corresponding to the pressure desired in the process
d) none of the mentione
Answer: a. pressure at the exhaust from the turbine is the saturation pressure corresponding to the temperature desired in the process

Q 37. In a by-product power cycle?
a) the power is produced initially
b) power production is in the middle stages of the cycle
c) power production is after the cycle has ended
d) none of the mentioned
Answer: c) power production is after the cycle has ended

Q 38. Back pressure turbines are usually _____ with respect to their power output.
a) large
b) small
c) very large
d) very small
Answer: b) small

Q 39. In terms of cost per MW compared to condensing sets of the same power, the back pressure turbines are?
a) more expensive
b) cheaper
c) costly
d) none of the mentioned.
Answer: b) cheaper

Q 40. Which of these is not an application of back pressure turbine?
a) desalination of sea water
b) filtration of water
c) process industries
d) petrochemical installation.
Answer: b) cheaper.

Q 41. Back pressure turbine is placed between _____
a) Turbine & Pump
b) Boiler & Pump
c) Turbine & Heat Exchanger
d) Boiler & Turbine.
Answer: d) Boiler & Turbine

Q 42. Which of the following is a good medium for constant temperature heating?
a) Water
b) Steam
c) Coolant
d) Diesel
Answer: b) Steam

Q 42. A plant producing both, electrical power & process heat simultaneously is?
a) cogenital plant
b) cogenerial plant
c) cogeneration plant
d) conglomerate plant
Answer: c) cogeneration plant

Q 43. In a back pressure turbine
a) pressure at the exhaust from the turbine is the saturation pressure corresponding to the temperature desired in the process
b) pressure at the entrance of the turbine is the saturation pressure corresponding to the temperature desired in the process
c) pressure at the exhaust from the turbine is the saturation pressure corresponding to the pressure desired in the process
d) none of the mentioned

Answer: a) pressure at the exhaust from the turbine is the saturation pressure corresponding to the temperature desired in the process.

Q 44. In a by-product power cycle?
A. the power is produced initially
B. power production is in the middle stages of the cycle
C. power production is after the cycle has ended
D. none of the mentioned
Answer: c) power production is after the cycle has ended
Q45. Which of the following is a good medium for constant temperature heating?
a) water
b) steam
c) coolant
d) diesel
Answer: c)

Q46. Which of these is not considered economical for cogeneration?

a) a high fraction of electric to total energy
b) a low fraction of electric to total energy
c) a low fraction of total energy to electric energy
d) none of the mentioned

Answer: b) a low fraction of electric to total energy

Q 47. What happens to the availability in a combined cycle plant?

a) decreases
b) increases
c) remains same
d) cannot say.

Answer: a) decreases

Q48 . Which of the following is not a type of Combined Plant?

a) sodium- mercury-potassium plant
b) gas turbine-steam turbine plant
c) thermionic steam plant
d) thermoelectric steam plant

Answer: a) sodium- mercury-potassium plant

Q 49. In terms of cost per MW compared to condensing sets of the same power, the back pressure turbines

a) more expensive
b) cheaper
c) costly
d) none of the mentioned

Answer: b) cheaper

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Question Bank for Multiple Choice Questions

Program: Diploma in Electrical engineering	**Program Code:- EE**
Scheme:-I	**Semester:- 5**
Course:- Energy Conservation	**Course Code:- 22525**

05 – Energy audit	**Marks:-08**
Content of Chapter:- 5.1 Energy audit,Specific energy consumption 5.2 Energy audit instrument & their use 5.3Questionnaire for energy audit project 5.4 Energy flow diagram 5.5 simple pay back period,Energy audit procedure 5.6 Energy audit report format	

1) Which instrument is used to monitor O2, CO in flue gas? (EA)
a) Combustion analyzer
b) Power analyzer
c) Pyrometer
d) Fyrite

2) Lux meter is used to measure.....
a) Illumination level
b) Sound intensity and illumination level
c) Harmonics
d) Speed

3) For a cement plant the parameter, "kWh/MT of clinker "indicates
a) Energy Index parameter
b) Utility factor
c) Production factor
d) Load factor

4) Energy manger should be well versed with
a) Manufacturing and processing skills
b) Managerial and technical skills
c) Technical and marketing skills
d) Managerial and commercial skills

5) An energy policy does not include
a) Target energy consumption reduction
b) Time period for reduction
c) Declaration of top management commitment
d) Future production projection

6) CO_2 measurement of Fyrite kit is based on
a) Weight basis (dry)
b) Volume basis (dry)
c) Weight basis (wet)
d) Volume basis (wet)

7) Non-contact speed measurements can be carried out by
a) Tachometer
b) Stroboscope
c) Oscilloscope
d) Speedometer

8) The tool used for performance assessment and logical evaluation of avenues for improvement in Energy management and audit is
a) Fuel substitution
b) Monitoring and verification
c) Energy pricing
d) Bench marking

09) Infrared thermometer is used to measure
a) Surface temperature
b) Flame temperature
c) Flue gas temperature
d) Hot water temperature

10) The various types of the instruments, which requires during audit need to be
a) Easy to carry
b) Easy to operate
c) Inexpensive
d) All (a) to (c)

11) Air velocity in ducts can be measured by using and manometer
a) Orifice meter
b) Borden gauge
c) Pitot tube
d) Anemometer

12) An energy audit team is formed during
a) post audit phase
b) audit phase
c) pre-audit phase
d) the time of study

13) Which of the following is not part of energy monitoring
a) data recording
b) data analysis
c) data reporting
d) energy efficiency equipment financing

(14)Simple payback period is equal to..

a. ratio of first cost/net yearly savings
b. ratio of annual gross cash flow/capital cost
c. none of above
d. **all of above**

(15) Simple payback period for energy efficiency motor that costs Rs.1.5lakh to purchase and install and is expected to save Rs.0.75lakh per annual is..

a. 1.1 years
b. 2 years
c. 0.75 years
d. **2.25 years**

(16)The cost of replacement of inefficient compressor with an energy efficient compressor in in a plant was Rs.5lakh the net annual cash flow is Rs.1.25lakh return on investment

a. 15%
b. **20%**
c. 25%
d. 19.35%

(17)The sum of present values of all the cash flows associated with it is called.....

a. **return on investment**
b. internal rate of return
c. net present value
d. none of the above

(18)ROI must always be ..... than interest rate

a. lower
b. **higher**
c. equal
d. no relation

(19)Costs associated with the design, planning, installation and commissioning of a project are..

a. variable cost
b. **capitol cost**
c. salvage value
d. none

(20)For calculation plant energy performance which of the following data is not required

a. current year's production
b. reference year's production
c. reference year's energy use
d. capacity utilization

(21) For an investment which has a fluctuating savings over is project life which of these analysis would be the best option ...

a) payback
b) NPV
c) **ROI**
d) IRR

(22) Which of the following is not an external source of fund

a. bank loans
b. leasing arrangement
c. **revenue budget**
d. private finance

(23)Which of the following is used to represent energy balance of a system?

a. Snaky diagram
b. flow chart
c. Single lines diagram
d. block diagram

(24)The essential element of monitoring and targeting system is...

a. Recording
b. reporting
c. Controlling
d. all the above

(25)Which one is the key element for successful energy management?

a. **Top management support**
b. planning
c. Monitoring
d. training

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