

# **Basic Electrical**

## **Question No. 01**

**Which of the following parameter will be more for 16 gauge copper wire in comparison to 14 gauge copper wire?**

- (A) Cost
- (B) Strength
- (C) Resistance
- (D) Weight

Answer: Option C

## **Question No. 02**

**The length of wire having resistance of 1 ohm/m in a heater rated at 1000 W and 250 V will be**

- (A) 250 m
- (B) 125 m
- (C) 62.5 m
- (D) 500 m

Answer: Option C

## **Question No. 03**

**Power dissipated in a pure capacitor is**

- (A) Minimum
- (B) Maximum
- (C) Infinite
- (D) Zero

Answer: Option D

## **Question No. 04**

**The size of the feeder is determined primarily by**

- (A) The current it is required to carry
- (B) The percentage variation of voltage in the feeder
- (C) The voltage across the feeder
- (D) The distance over which the transmission is made

Answer: Option A

## **Question No. 05**

**Non-conductors whose polarisation is caused by an electric field are known as**

- (A) Dielectric
- (B) Super-conductors
- (C) Semi-conductors
- (D) Insulators

Answer: Option A

**Question No. 06**

**If the diameter of a conductor is double, then its resistance will be reduced to**

- (A) Half
- (B) One-fourth
- (C) One-eight
- (D) one-sixteenth

Answer: Option B

**Question No. 07**

**One of difficulties encountered with super-conductors is**

- (A) The materials become highly magnetic
- (B) Strength is reduced
- (C) Resistance is increased
- (D) Maintenance of low temperature

Answer: Option D

**Question No. 08**

**The inductance of a coil can be increased by**

- (A) Decreasing number of turns
- (B) Increasing core length
- (C) Using core material of high relative permeability
- (D) All of the above

Answer: Option C

**Question No. 09**

**The resistance of a lamp rated at 240 V and 60 watts equal to**

- (A) 60 ohms
- (B) 120 ohms
- (C) 240 ohms
- (D) 480 ohms

Answer: Option C

**Question No. 10**

**Two resistances of 100 ohms and 0 ohm are connected in parallel. The overall resistance will be**

- (A) 100 ohms
- (B) 50 ohms
- (C) Zero ohm
- (D) Any one of the above

Answer: Option A

**Question No. 11**

**A parallel A.C circuit in resonance will**

- (A) Have high impedance
- (B) Generate maximum noise
- (C) Generate maximum heat

(D) Generate maximum power

Answer: Option A

**Question No. 12**

**Two resistors of 2 k-ohm value each and 1 watt rating are connected in series. The net resistance and wattage value will be**

(A) 4 k-ohm, 2 watt

(B) 1 k-ohm,  $\frac{1}{2}$  watt

(C) 4 k-ohm, 1 watt

(D) 2 k-ohm, 2 watt

Answer: Option A

**Question No. 13**

**Sheath is used in the cables to**

(A) Prevent the moisture from entering the cable

(B) Provide the strength to the cable

(C) Avoid the chances of the rust on the strands

(D) Provide proper insulation

Answer: Option A

**Question No. 14**

**The voltage stress is maximum in the cable**

(A) At the surface of the earth

(B) At the surface of the conductor

(C) At the surface of the insulator

(D) At the surface of the armouring

Answer: Option C

**Question No. 15**

**A coil having an inductance of 100 mH is carrying a current of 100 A. If the current is reduced to zero in 0.02 sec, the self induced e.m.f will be**

(A) 125 V

(B) 250 V

(C) 375 V

(D) 500 V

Answer: Option A

**Question No. 16**

**Which of the following is the poorest conductor of electricity?**

(A) Silver

(B) Copper

(C) Aluminium

(D) Carbon

Answer: Option D

**Question No. 17**

**If the potential difference across a parallel plate air capacitor is increased, the electric field intensity between the plates will increase**

- (A) In same proportion
- (B) Double the proportion
- (C) As square of the change
- (D) As square root of the change

Answer: Option B

**Question No. 18**

**The power factor at resonance in R-L-C parallel circuit is**

- (A) 0.5 lagging
- (B) 0.5 leading
- (C) Unity
- (D) Zero

Answer: Option C

**Question No. 19**

**A 10 cm long conductor is linked with a magnetic field of 1 weber/sq. m. When a current of 10 A passes through it, it will experience a force of**

- (A) 0.01 N
- (B) 0.1 N
- (C) 1 N
- (D) 10 N

Answer: Option C

**Question No. 20**

**The energy requirement for an industrial application is 1000 kW. hr. If heat losses account for 20%, the total energy to be supplied is**

- (A) 1200 kW hr
- (B) 800 kW hr
- (C) 1250 kW hr
- (D) 750 kW hr

Answer: Option C

**Question No. 21**

**The cells are connected in series to**

- (A) Increase the current output
- (B) Increase the voltage output
- (C) Decrease the internal resistance
- (D) Decrease the amount of charging voltage required

Answer: Option B

**Question No. 22**

**A floating battery is one**

- (A) Which is getting charge
- (B) Which is feeding load
- (C) In which battery, voltage is equal to charger voltage
- (D) Which gets charged and discharged simultaneously

Answer: Option C

**Question No. 23**

**The sparking at the brushes in the D.C generator is attributed to**

- (A) Quick reversal of current in the coil under commutation
- (B) Armature reaction
- (C) Reactance voltage
- (D) High resistance of the brushes

Answer: Option C

**Question No. 24**

**The transformers is not used in the D.C line because**

- (A) There is no need to step up the D.C voltage
- (B) Losses in the D.C circuit are high
- (C) Faraday's law is not valid as the rate of change of flux is zero
- (D) D.C transformers are costly

Answer: Option C

**Question No. 25**

**The purpose of laminating a transformer core is**

- (A) Difficulty of fabricating solid core
- (B) Laminated core provides high flux density
- (C) Avoid eddy current and hysteresis losses
- (D) Increase the main flux

Answer: Option C

**Question No. 26**

**The mechanical power developed by the D.C motor is maximum when back e.m.f is equal to**

- (A) Applied voltage
- (B) Zero
- (C) Half the applied voltage
- (D) Twice the applied voltage

Answer: Option C

**Question No. 27**

**A series motor at no load develops**

- (A) Zero speed
- (B) Average speed
- (C) Rated speed

(D) Infinite speed

Answer: Option D

**Question No. 28**

**In the case of D.C shunt motor, the torque with increase in speed will**

- (A) Increase linearly
- (B) Decrease linearly
- (C) Increase parabolically
- (D) Remain unchanged

Answer: Option D

**Question No. 29**

**If the supply terminals of D.C shunt motor are interchanged, then**

- (A) Motor will stop
- (B) Motor will run at its normal speed in the same direction as it was running
- (C) The direction of rotation will reverse
- (D) Motor speed will increase

Answer: Option C

**Question No. 30**

**In the case of D.C shunt generator, as the load current increases, the terminal voltage**

- (A) Decreases gradually slightly from a maximum value
- (B) Increases linearly from zero
- (C) Decreases linearly from maximum to zero
- (D) Remain constant

Answer: Option A

**Question No. 31**

**If A.C is fed by mistake to a D.C motor, then the D.C motor will**

- (A) Burn as the eddy currents in the field produce heat
- (B) Run at its normal speed
- (C) Run at a lower speed
- (D) Run continuously, but the sparking takes place at the brushes

Answer: Option A

**Question No. 32**

**The following motor is preferred for locomotives motor drives**

- (A) A.C Series motor
- (B) Induction motor
- (C) D.C Series motor
- (D) Synchronous motor

Answer: Option C

**Question No. 33**

**Which of the following motors has high starting torque?**

- (A) D.C shunt motor
- (B) Squirrel cage induction motor
- (C) D.C Series motor
- (D) A.C Series motor

Answer: Option C

**Question No. 34**

**In a D.C generator, following loss will be minimum**

- (A) Copper loss
- (B) Iron loss
- (C) Friction loss
- (D) Shunt field copper loss

Answer: Option B

**Question No. 35**

**If the excitation to the field of the D.C motor is constant, then the torque developed in the motor is proportional to**

- (A) Armature current
- (B) Field current
- (C) Speed
- (D) Magnetic flux

Answer: Option A

**Question No. 36**

**Eddy current loss in a D.C shunt generator is proportional to**

- (A) Flux density
- (B)  $\sqrt{\text{Flux density}}$
- (C)  $1/\text{Flux density}$
- (D)  $(\text{Flux density})^2$

Answer: Option D

**Question No. 37**

**The torque of a D.C series motor with increase in speed**

- (A) Increases gradually
- (B) Decreases linearly
- (C) Remain constant
- (D) First decreases rapidly and then slowly

Answer: Option D

**Question No. 38**

**The function of the commutator in a D.C machine is**

- (A) To change alternating current to a direct current
- (B) To improve commutation

- (C) To improve efficiency of motor
- (D) To change alternating voltage to direct voltage

Answer: Option D

**Question No. 39**

**The torque in induction motor is proportional to**

- (A) Slip  $s$
- (B)  $1/s$
- (C)  $s^2$
- (D)  $1 - s$

Answer: Option A

**Question No. 40**

**Which of the following motors is usually used in household refrigerator?**

- (A) D.C shunt motor
- (B) Reluctance motor
- (C) Single phase induction motor (split phase start or induction run motor)
- (D) Synchronous motor

Answer: Option C

**Question No. 41**

**The maximum temperature permitted for class A insulation is**

- (A) 180 °C
- (B) 105 °C
- (C) 120 °C
- (D) 155 °C

Answer: Option B

**Question No. 42**

**The torque in the case of a wound rotor induction motor**

- (A) Increases as rotor resistance is increased
- (B) Decreases as rotor resistance is increased
- (C) Remains unaffected by increase/decrease of rotor resistance
- (D) Is maximum when rotor is shorted

Answer: Option A

**Question No. 43**

**For hoist and cranes which motor should be selected**

- (A) 3 phase induction motor
- (B) Synchronous motor
- (C) D.C series motor
- (D) D.C shunt motor

Answer: Option C

**Question No. 44**

**The power output of induction motor will be maximum when**

- (A) The equivalent load resistance is equal to the standstill reactance of the motor
- (B) The equivalent load resistance is equal to the resistance of the motor
- (C) The equivalent load resistance is equal to the standstill leakage impedance of the motor
- (D) The slip is zero

Answer: Option C

**Question No. 45**

**The speed of induction motor is**

- (A) Synchronous speed
- (B) Synchronous speed  $\times$  slip
- (C) Synchronous speed / (1 - slip)
- (D) Synchronous speed  $\times$  (1 - slip)

Answer: Option D

**Question No. 46**

**Which of the following motors has high starting torque?**

- (A) A.C motor
- (B) Induction motor
- (C) Synchronous motor
- (D) D.C series motor

Answer: Option D

**Question No. 47**

**The starting torque of the slip ring induction motor is increased by**

- (A) Adding external resistance to the rotor
- (B) Adding the external inductance to the rotor
- (C) Adding both external resistance and inductance to the rotor
- (D) Adding external capacitance to the rotor

Answer: Option A

**Question No. 48**

**An under-excited synchronous motor draws current at**

- (A) Unity power factor (p.f)
- (B) Leading p.f
- (C) Lagging p.f
- (D) Leading/lagging depending on the underload/overload

Answer: Option C

**Question No. 49**

**The torque developed by an induction motor corresponding to zero slip is equal to**

- (A) Maximum
- (B) Full rated capacity
- (C) Zero

(D) Minimum  
Answer: Option C

**Question No. 50**

**Which of the following motors is most frequently used in industries?**

- (A) Synchronous motor
- (B) Commutator motor
- (C) Single phase A.C motor
- (D) 3 phase induction motor

Answer: Option D

**Question No. 51**

**An induction motor is**

- (A) Self-starting with zero torque
- (B) Self-starting with high torque
- (C) Self-starting with small torque than rated torque
- (D) Self-starting with infinite torque

Answer: Option C

**Question No. 52**

Full load current of a 10 HP, 3 phase, 440 V induction motor is of the order of

- (A) 7 A
- (B) 14 A
- (C) 21 A
- (D) 28 A

Answer: Option B

**Question No. 53**

**The starting current by a delta connected induction motor as compared to star connected motor under all other identical conditions is**

- (A) Same
- (B) 2 times
- (C) 3 times
- (D)  $\frac{1}{2}$  times

Answer: Option C

**Question No. 54**

**The rotor slots are usually given slight skew in the squirrel cage induction motor**

- (A) To increase the tensile strength of the rotor bars and hence strength
- (B) To reduce the magnetic hum and locking tendency of the rotor
- (C) To save the copper used
- (D) Because of ease in fabrication

Answer: Option B

**Question No. 55**

**The class C insulation can withstand**

- (A) 180 °C
- (B) 150 °C
- (C) 200 °C
- (D) 105 °C

Answer: Option A

**Question No. 56**

**The untreated paper falls in the following class of insulation**

- (A) A
- (B) B
- (C) E
- (D) O

Answer: Option D

**Question No. 57**

**Mica tape falls under the following class of insulation**

- (A) A
- (B) B
- (C) E
- (D) H

Answer: Option B

**Question No. 58**

**The material used for fuse must have**

- (A) Low melting point and low specific resistance
- (B) Low melting point and high specific resistance
- (C) High melting point and low specific resistance
- (D) Low melting point with any specific resistance

Answer: Option B

**Question No. 59**

**The Buchhloz relay is used to protect the**

- (A) Alternators against all internal faults
- (B) Oil immersed transformers against all internal faults
- (C) Synchronous motor against all internal faults
- (D) Transmission lines against all short-circuit faults

Answer: Option B

**Question No. 60**

**The earthing transformer is used**

- (A) To avoid the harmonics in the transformer
- (B) To provide artificial neutral earthing where the neutral points of the three phase system are not accessible

(C) To improve the current capacity of the neutral wire

(D) To improve efficiency

Answer: Option B

**Question No. 61**

**The voltage regulation of a transformer is poor at**

(A) Unity power factor

(B) Zero power factor

(C) Leading power factor

(D) Lagging power factor

Answer: Option D

**Question No. 62**

**The copper losses in a transformer at half load compared to those at full load will be**

(A) Same

(B) Half

(C) One-fourth

(D) 2 times

Answer: Option C

**Question No. 63**

**It is essential that transformer oil should have no traces of moisture. The reason is that**

(A) Density of oil increases with reduces heat dissipation

(B) Moisture will reduce the dielectric strength of the oil and hence insulation is weakened

(C) Moisture will reduce the lubricating property of the oil

(D) Moisture will develop rust

Answer: Option B

**Question No. 64**

**Which of the following electrical machines has the highest efficiency?**

(A) D.C shunt motor

(B) Transformer

(C) Induction motor

(D) Synchronous motor

Answer: Option B

**Question No. 65**

**The condition for the maximum efficiency of the transformer is that**

(A) Copper losses are half of the iron losses

(B) Copper losses are equal to iron losses

(C) Copper losses are negligible in comparison to iron losses

(D) Iron losses are zero

Answer: Option B

**Question No. 66**

**The operation of the electric generator and motor is based on the interaction between**

- (A) Magnetic field and electric field
- (B) Magnetic field and electric current
- (C) Electric field and law of induction
- (D) Law of induction and dynamo-electric principle

Answer: Option B

**Question No. 67**

**Which of the following transformers will have smallest size with same electrical specifications?**

- (A) Oil Natural Air Natural (ONAN) cooled transformer
- (B) Dry type transformer
- (C) Oil Natural Air Forced (ONAF) cooled transformer
- (D) Oil Natural Water Forced (ONWF) cooled transformer

Answer: Option D

**Question No. 68**

**Which parameter is increased by step up transformer?**

- (A) Current
- (B) Resistance
- (C) Voltage
- (D) Frequency

Answer: Option C

**Question No. 69**

**Open circuit test on transformer measures**

- (A) Impedance and insulation resistance
- (B) Voltage regulation
- (C) Eddy current loss
- (D) Core loss

Answer: Option D

**Question No. 70**

**In a step up transformer, which of the following is correct?**

- (A) Secondary power is more than primary
- (B) Secondary current is more than primary
- (C) Secondary turns are more than primary
- (D) Phase shift between secondary and primary is  $180^\circ$

Answer: Option C

**Question No. 71**

**The efficiency of a transformer is usually of the order of**

- (A) 33 %
- (B) 50 %
- (C) 75 %

(D) 98 %

Answer: Option D

**Question No. 72**

**The dielectric strength of transformer oil should be of the order of**

(A) 415 kV

(B) 6.6 kV

(C) 11 kV

(D) 30 kV

Answer: Option D

**Question No. 73**

**If the secondary winding of the current transformer is opened when current is flowing in the primary current, then following will result**

(A) There will be high current in the secondary winding

(B) There will be very high induced voltage in the secondary winding

(C) There will be very weak flux density in the core

(D) The transformer will burn immediately

Answer: Option B

**Question No. 74**

**It is possible to extend the range of an A.C ammeter by using**

(A) Current transformer (CT)

(B) Shunt

(C) Capacitor

(D) Inductor coil

Answer: Option A

**Question No. 75**

**Which of the following voltmeters should be selected for most accurate reading?**

(A) 100 V, 1 A

(B) 100 V, 100 ohms/volt

(C) 100 V, 1 mA

(D) 100 V, 100 mA

Answer: Option C

**Question No. 76**

**Which of the following instrument will be used to measure alternating current?**

(A) Moving iron voltmeter

(B) Permanent magnet type ammeter

(C) Induction type ammeter

(D) Moving iron (attraction type) ammeter

Answer: Option D

**Question No. 77**

**The internal impedance of an accurate voltmeter should be**

- (A) As low as possible
- (B) Low
- (C) Negligible
- (D) Very high

Answer: Option D

**Question No. 78**

**A moving coil instrument can be used to measure**

- (A) Low frequency alternating current
- (B) High frequency alternating current
- (C) Direct current
- (D) Direct current and alternating current both

Answer: Option C

**Question No. 79**

**Which of the following statement is true?**

- (A) A galvanometer with low resistance in series is an ammeter
- (B) A galvanometer with high resistance in series is an ammeter
- (C) A galvanometer with high resistance in parallel is a voltmeter
- (D) A galvanometer with low resistance in parallel is a voltmeter

Answer: Option A

**Question No. 80**

**High current of the order of 100 A can be measured by an ammeter of 0 - 1 A rating by using**

- (A) Shunt
- (B) Capacitor
- (C) R-C network
- (D) Current transformer

Answer: Option D

**Question No. 81**

**The insulation resistance of cables, transformers etc is measured by following instrument**

- (A) Wheatstone bridge
- (B) Kelvin bridge
- (C) Meggar
- (D) Decade box

Answer: Option C

**Question No. 82**

**A watt meter can be connected to a high current circuit by using**

- (A) Eddy current transformer
- (B) Potential transformer
- (C) Current transformer

(D) Shunt

Answer: Option C

**Question No. 83**

**The Wheatstone bridge is used to measure**

- (A) Low value of current
- (B) High value of current
- (C) High value of voltage
- (D) Resistance value

Answer: Option D

**Question No. 84**

**The internal resistance of all milliammeter must be very low for**

- (A) High resistance
- (B) High accuracy
- (C) Maximum voltage drop across the meter
- (D) Minimum effect on the current in the circuit

Answer: Option D

**Question No. 85**

**The internal resistance of the voltmeter must be very high in order to have**

- (A) High voltage range
- (B) Minimum current through the meter
- (C) Maximum loading effect
- (D) More current supplied by the voltage source

Answer: Option D

**Question No. 86**

**Friction losses are more in the following type of instrument**

- (A) Dynamometer type
- (B) Moving coil type
- (C) Moving iron type
- (D) Null balance type

Answer: Option A

**Question No. 87**

**A D.C voltmeter can be directly used to measure**

- (A) Power factor
- (B) Insulation resistance
- (C) Frequency
- (D) Polarity

Answer: Option A