

## Technical Knowledge (Electrical)



1. The power consumed in a circuit element will be least when the phase difference between the current and voltage is
  - (A)  $180^\circ$
  - (B)  $90^\circ$
  - (C)  $60^\circ$
  - (D)  $0^\circ$
  
2. Form Factor is the ratio of
  - (A) Average value/r.m.s. value
  - (B) Average value/peak value
  - (C) r.m.s. value/average value
  - (D) r.m.s. value/peak value
  
3. Capacitive reactance is more when
  - (A) Capacitance is less and frequency of supply is less
  - (B) Capacitance is less and frequency of supply is more
  - (C) Capacitance is more and frequency of supply is less
  - (D) Capacitance is more and frequency of supply is more
  
4. Pure inductive circuit
  - (A) Consumes some power on average
  - (B) Does not take power at all from a line
  - (C) Takes power from the line during some part of the cycle and then returns back to it during other part of the cycle
  - (D) None of the above
  
5. Power factor of the following circuit will be zero
  - (A) Resistance
  - (B) Inductance
  - (C) Capacitance
  - (D) Both (B) and (C)
  
6. The double energy transient occur in the
  - (A) Purely inductive circuit
  - (B) R-L circuit
  - (C) R-C circuit
  - (D) R-L-C circuit
  
7. In any A.C. circuit always
  - (A) Apparent power is more than actual power
  - (B) Reactive power is more than apparent power

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- (C) Actual power is more than reactive power
  - (D) Reactive power is more than actual power
8. Magnitude of current at resonance in R-L-C circuit
- (A) Depends upon the magnitude of R
  - (B) Depends upon the magnitude of L
  - (C) Depends upon the magnitude of C
  - (D) Depends upon the magnitude of R, L and C
9. The safest value of current the human body can carry for more than 3 second is
- (A) 4 mA
  - (B) 9 mA
  - (C) 15 mA
  - (D) 25 mA
10. The purpose of a parallel circuit resonance is to magnify
- (A) Current
  - (B) Voltage
  - (C) Power
  - (D) Frequency
11. Which of the following refers to a parallel circuit?
- (A) The current through each element is same
  - (B) The voltage across element is in proportion to it's resistance value
  - (C) The equivalent resistance is greater than any one of the resistors
  - (D) The current through any one element is less than the source current
12. The frequency of domestic power supply in India is
- (A) 200 Hz
  - (B) 100 Hz
  - (C) 60 Hz
  - (D) 50 Hz
13. The frequency of an alternating current is
- (A) The speed with which the alternator runs
  - (B) The number of cycles generated in one minute
  - (C) The number of waves passing through a point in one second
  - (D) The number of electrons passing through a point in one second
14. In a pure inductive circuit if the supply frequency is reduced to  $1/2$ , the current will
- (A) Be reduced by half

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- (B) Be doubled
- (C) Be four times as high
- (D) Be reduced to one fourth

15. Those magnetic materials are best suited for making armature and transformer cores which have \_\_\_\_\_ permeability and \_\_\_\_\_ hysteresis loss.

- (A) High, high
- (B) Low, high
- (C) High, low
- (D) Low, low

16. In a magnetic material hysteresis loss takes place primarily due to

- (A) Rapid reversals of its magnetization
- (B) Flux density lagging behind magnetizing force
- (C) Molecular friction
- (D) Its high retentivity

17. Silicon steel is used in electrical machines because it has

- (A) Low coercivity
- (B) Low retentivity
- (C) Low hysteresis loss
- (D) High coercivity

18. Reciprocal of reluctance is

- (A) Reluctivity
- (B) Permeance
- (C) Permeability
- (D) Susceptibility

19. Hysteresis loss least depends on

- (A) Volume of material
- (B) Frequency
- (C) Steinmetz's coefficient of material
- (D) Ambient temperature

20. An air gap is usually inserted in magnetic circuits to

- (A) Increase m.m.f.
- (B) Increase the flux
- (C) Prevent saturation
- (D) None of the above

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21. The rate of rise of current through an inductive coil is maximum
- (A) At 63.2% of its maximum steady value
  - (B) At the start of the current flow
  - (C) After one time constant
  - (D) Near the final maximum value of current
22. Conductivity is analogous to
- (A) Retentivity
  - (B) Resistivity
  - (C) Permeability
  - (D) Inductance
23. Which of the following is an advantage of hydrogen cooling?
- (A) Increase in efficiency
  - (B) Increase in ratings
  - (C) Increase in life
  - (D) All of the above
24. \_\_\_\_\_ cooling is the process of dissipating the armature and field winding losses to a cooling medium circulating within the winding insulation wall
- (A) Direct
  - (B) Indirect
  - (C) Conventional
  - (D) Any of the above
25. \_\_\_\_\_ electromagnets generally function as holding magnets.
- (A) Tractive
  - (B) Portative
  - (C) Either of the above
  - (D) None of the above
26. Direct water cooling of rotor winding presents
- (A) No mechanical difficulties
  - (B) Lesser mechanical difficulties
  - (C) Greater mechanical difficulties
  - (D) None of the above
27. The winding where dummy coils are used is sometimes called
- (A) Duplex winding
  - (B) Triplex winding
  - (C) Forced winding

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(D) None of the above

28. The heat dissipating capability of transformers of ratings higher than 30 kVA is increased by providing which of the following?

- (A) Corrugations
- (B) Fins
- (C) Tubes
- (D) All of the above

29. A current density of \_\_\_\_\_ is used for large power transformers with forced circulation of oil or with water cooling coils

- (A) 1.5 to 2.5 A/mm<sup>2</sup>
- (B) 3.5 to 4.5 A/mm<sup>2</sup>
- (C) 4.0 to 5.0 A/mm<sup>2</sup>
- (D) 5.4 to 6.2 A/mm<sup>2</sup>

30. D.C. servomotors are used in

- (A) Purely D.C. control systems
- (B) Purely AC. control systems
- (C) Both D.C. and AC. control systems
- (D) None of the above

31. In a D.C. machine the current per brush arm should not be more than

- (A) 100 A
- (B) 200 A
- (C) 300 A
- (D) 400 A

32. Which of the following methods may be adopted to reduce the effects of armature reaction?

- (A) Increase in length of air gap at pole tips
- (B) Increasing reluctance of pole tips
- (C) Compensating windings
- (D) All of the above

33. The spring material used in a spring control device should have the following property.

- (A) Should be nonmagnetic
- (B) Most be of low temperature coefficient
- (C) Should have low specific resistance
- (D) All of the above

34. For handling greater currents induction watt-meters are used in conjunction with

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- (A) Potential transformers
- (B) Current transformers
- (C) Power transformers
- (D) Either of the above

35. The chemical effect of current is used in

- (A) D.C. ammeter hour meter
- (B) D.C. ammeter
- (C) D.C. energy meter
- (D) None of the above

36. The multiplier and the meter coil in a voltmeter are in

- (A) Series
- (B) Parallel
- (C) Series-parallel
- (D) None of the above

37. The pressure coil of a wattmeter should be connected on the supply side of the current coil when

- (A) Load impedance is high
- (B) Load impedance is low
- (C) Supply voltage is low
- (D) None of the above

38. When a capacitor was connected to the terminal of ohmmeter, the pointer indicated a low resistance initially and then slowly came to infinity position. This shows that capacitor is

- (A) Short-circuited
- (B) All right
- (C) Faulty
- (D) None of the above

39. Which of the following devices should be used for accurate measurement of low D.C. voltage?

- (A) Small range moving coil voltmeter
- (B) D.C. potentiometer
- (C) Small range thermocouple voltmeter
- (D) None of the above

40. To measure an A. C. voltage by using an A.C. potentiometer, it is desirable that the supply for the potentiometer is taken

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- (A) From a source which is not the same as the unknown voltage
- (B) From a battery
- (C) From the same source as the unknown voltage
- (D) Any of the above

41. Wagner earthing device is used to eliminate errors due to

- (A) Electrostatic coupling
- (B) Electromagnetic coupling
- (C) Both (A) and (B)
- (D) None of the above

42. The two pressure coils of a single phase power factor meter have

- (A) The same dimensions and the same number of turns
- (B) The same dimension but different number of turns
- (C) The same number of turns but different dimensions
- (D) None of the above