1. Which is the common method of cooling a power transformer?

   (1) air-cooling (2) air-blast cooling **(3) oil cooling** (4) natural cooling

   Ans(3)

2. Alternator generates

   (1) d.c. **(2) a.c.** (3) bothd.c. and a.c. (4) pulsatingd.c

   Ans(2)

3. The synchronous motor runs on

   (1) 3 phasea.c. supply (2) 3 phase a.c. and d.c. supply

   (3) d.c. supply only (4) 3 phase a.c. and single phase a.c.

   Ans(1)

The synchronous speed is the constant speed of the machine whose value depends on the frequency and the numbers of the pole of the machine.

Main Features of Synchronous Motor

The speed of the synchronous motor is independent of the load, i.e., the variation of the load does not affect the speed of the motor.
The synchronous motor is not self-starting. A prime mover is used for rotating the motor at its synchronous speed.
The synchronous motor operates both for leading and lagging power factor.
The synchronous motor can also be started with the help of the damper windings.

4. Electrical machines are designed to have maximum efficiency at

   (1) full load (2) 50% of full load (3) near full load (4)no load

   Ans(3)

The **machine efficiency** rises with load. But at a particular load, **efficiency** is **maximum** and beyond this load, **efficiency** diminishes. Also, for both motors and generators, **machine efficiency** is **maximum** when variable loss = constant loss

5. The efficiency of electrical machines is maximum when

   (1) constant loses = (variable copper losses)^2

   (2) constant loses = variable copper losses

   (3) constant loses = (variable copper losses)

(4) none of these

Ans(2)

6. Megger is used for measuring

(1) low resistance

(2) high resistance

(3) medium resistance

(4) resistance above one mega ohm, i.e., insulation resistance

Ans(4)

A megger is an electrical measuring instrument, it can be used to measure the insulation resistance. A megger has a DC generator and an ohmmeter in it. A normal ohm meter cannot be used to measure high resistance values, so in that case, we can use a megger or megohmmeter. It can be used to check the electrical insulation of devices such as electric cables or a motor.

7. For which of the following fields of application is the three phase induction motor mainly suitable?

(1) for running of electric vehicles

(2) for running of rolling mills where an exact speed control is required

(3) for running of different mechanic tools where one or a few speeds are required.

(4) for running of paper machines

Ans(4)

Three-Phase Induction Motor: These motors are self-starting and use no capacitor, starter winding, centrifugal switch or other starting device. Three-phase AC induction motors are widely used in industrial and commercial applications. These are of two types, squirrel cage and slip ring motors. Squirrel cage motors are widely used due to their rugged construction and simple design. Slip ring motors require external resistors to have high starting torque. Induction motors are used in industry and domestic appliances because these are rugged in construction requiring hardly any maintenance, that they are comparatively cheap, and require supply only to the stator.

Advantages of Induction Motor

Low cost
Low maintenance cost
Ease of operation

Speed Variation
High starting torque

Applications of Three Phase Induction Motor

Lifts
Cranes
Hoists
Large capacity exhaust fans
Driving lathe machines
Crushers
Oil extracting mills
Textile and etc.

8. Multimeter can be used for measuring

(1) alternating current quantities (2) d.c. quantities

(3) botha.c. and d.c. quantities (4) None

Ans(3)

A multimeter also known as a VOM (volt-ohm-milliammeter), is an electronic measuring instrument that combines several measurement functions in one unit. A typical multimeter can measure voltage, current, and resistance.

Alogmultimeters use a microammeter with a moving pointer to display readings.

Digital multimeters (DMM, DVOM) have a numeric display, and may also show a graphical bar representing the measured value. Digital multimeters have rendered analogmultimeters obsolescent, because they are now lower cost, higher precision, and more physically robust.

A multimeter can be a hand-held device useful for basic fault finding and field service work, or a bench instrument which can measure to a very high degree of accuracy. Multimeters are available in a wide range of features and prices

9. Earth electrodes can be in the form of

(1) rods and pipes (2) strips (3) plates **(4) any of these**

Ans(4)

10. The higher the gauge number of wire

(1) smaller the wire diameter

(2) larger the wire diameter

(3) gauge number is not related to the wire size

(4) None

Ans(1)

11. An electric circuit consists of a

(1) battery only

(2) power source, an electrical load and connecting wires

(3) battery, an electrical and a power-side wire only

(4) None of these

Ans(2)

12. The transistors are

(1) low voltage, low current devices

(2) high voltage, high current devices

(3) low voltage, high current devices

(4)Only low current devices

Ans(1)

13. Jumper cables should be made from

(1) copper at least 8 gauge

(2) aluminium or copper at least 6 gauge

(3) copper at least 4 gauge

(4) none of these

Ans(2)

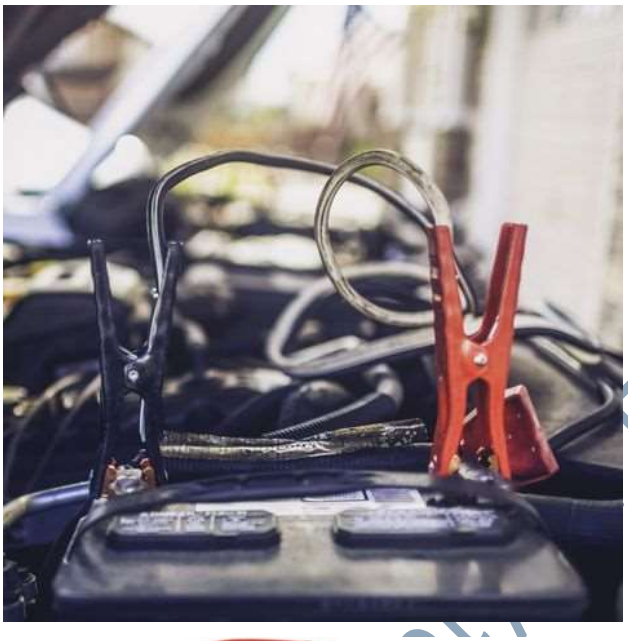
Metal composition and gauge: Solid copper is considered to be one of the best conductors of electricity, followed closely by aluminum. Aluminum jumper cables are generally less expensive, but the gauge may not be low enough to handle larger vehicles. One popular compromise is a copper-clad aluminum cable, which conducts electricity nearly as well as solid copper but uses aluminum to reduce weight and cost.

A **jump start**, also called a **boost**, is a method of starting a vehicle that has a discharged or dead battery. A temporary connection is made to the battery of another vehicle, or to some other external power source. The external supply of electricity recharges the disabled vehicle's battery and provides some of the power needed to crank the engine. Once the vehicle has been started, its normal charging system will recharge, so the auxiliary source can be removed. If the vehicle charging system is functional, normal operation of the vehicle will restore the charge of the battery.

Motorists may carry jumper cables in case of accidental discharge of the vehicle battery (for example, by headlights or ignition switch left on while the engine is not running). Safe procedures for connecting and disconnecting cables are given in the vehicle manual

Jumper cables are electric cables to connect two rail or road vehicles.

Jumper cables, also known as booster cables or jump leads, are a pair of insulated wires of sufficient capacity with alligator clips at each end to interconnect the disabled equipment/vehicle with an auxiliary source, such as another vehicle or equipment with the same system voltage or to another battery. The alligator clips may be covered in insulation to prevent inadvertent shorting. Clips may be made of copper or steel. Alligator clips are generally marked by black (−) and red (+) to indicate the polarity.



While buying consider the following parameters:

Length of cables

Gauge (thickness) of wire

Material of clip

Type of insulation

There are many important factors to consider, but perhaps the first is gauge. The jumper cables' gauge should match the size of the vehicle. A large truck, RV, or SUV might require 1- or 2-gauge cables for maximum benefit. A standard passenger sedan can be jump-started safely with 4- or 6-gauge cables.

Ref.

14. The fuse is made of

(1) tin (2) lead (3) copper (4) silver

Ans(4)

The fuse element is made of **zinc**, **copper**, **silver**, **aluminum**, or **alloys** among these or other various metals to provide stable and predictable characteristics.

15. Batteries are rated in

(1) watt hour **(2) ampere-hour** (3)weber (4) None.

Ans(2)

16. Transformers are rated in

(1) watt-hour (2) ampere hour (3)kw-hr **(4) KVA**

Ans(4)

17. The velocity of sound in atmospheric air is about

(1) 320-340 m/sec (2) 6420 m/sec (3) 5941 m/sec (4) 1500 m/sec

Ans(1)

18. The velocity of sound in steel is about

(1) 1000 m/s (2) 6420 m/s **(3) 4940 -5000 m/s** (4) 1500 m/s

Ans(3)

19. The velocity of sound in normal water is about

(1) 1480 m/s (2) 5444 m/s (3) 6000 m/s (4) 320 m/s

Ans(1)

20. A universal motor runs in

(1) DC (2) AC **(3) Both AC and DC** (4) None

Ans(3)

…….. Eas ends

21. A motor car starting from rest ravels a distance of 64 metres in 8 seconds. What is its acceleration?

(1)2m/sec^2 (2) 4m/sec^2 (3) 11.2 m/sec^2 (4) 0.5 m/sec2

Ans(3)

22. The voltage applied across the lamp of a 3 cell (dry cell) torch will be –

(1) 1.5 volt (2) 3 volt (3) 4.5 volt (4) 6 volt

Ans(3)

23. Brass is an alloy of –

(1) Copper and Tin (2) Lead and Tin (3) Zinc and Tin (4) Copper and Zinc

Ans(4)

24. Plasmodium germs causes –

(1) Malaria (2) Sleeping sickness (3) Cholera (4) None of the above

Ans(1)

25. Pascal is a unit of:

(1) Temperature (2) Power (3) Pressure (4) Energy

Ans(3)

26. A woman pulls a car 150kg and produces an acceleration of 4m/s^2. Find the force exerted by the man-

(1) 600 N (2) 600 Dynes (3) 150 N (4) 150 Dynes

Ans(1)

27. The unit of magnetic flux is:

(1) Weber (2) Henry (3) Coulomb (4) Tesla

Ans(4)

Note: Magnetic flux density has the dimension mass per time squared electric current. The SI derived **unit of magnetic flux** density is the tesla, which is defined as a volt second per square meter.

28. What is the voltage of an electrical circuit with 3 ampere current and 60 ohms resistance?
(1) 20 volts (2) 180 volts (3) 30 volts (4) 90 volts
Ans(2)

29. Identify the type of motor recommended for locomotive drive –
(1) D.C. Series motor
(2) D.C. Compound Motor
(3) D.C. Shunt motor
(4) Synchronous motor (Nowadays)
Ans(1 and 4)

30. Avogadro number N is a
(1) Constant at constant temperature (2) Constant at constant pressure
(3) Constant at constant volume (4) Universal constant
Ans(4)

Note: Avogadro's number is defined here as a number, i.e., a dimensionless quantity. Its latest numeric value is $N_A = 6.022\ 141\ 79 \times 10^{23}$. The SI definition of Avogadro's constant (also designated N_A) is: the number of entities (such as atoms, ions, or molecules) per mole.The units may be the number of electrons, atoms, ions, or molecules, depending on the nature of the substance and the character of the reaction (if any).

31. A rod 80 cm long is suspended by a string such that one side is having 30 cm and the other side is having 50 cm. The rod is balanced with a weight of 2kg is suspended from the end having 30 cm from the suspension point. What weight is suspended from the other end?
(1) 12kg (2) 1.2 kg (3) 3.33 kg (4) 2 kg

Ans(2)

Note; 30 x 2 = 50x X

32. In which state is Silent Valley located?
(1) Tamil Nadu (2) Kerala (3) Assam (4) Arunachal Pradesh
Ans(2)

33. The process of coating of Zinc on iron is _____.
(1) Electroplating (2) Cladding (3) Galvanizing (4) Metal coating
Ans(3). Anti rusting coating of steel pipes.

34. Cooling of water in an earthen pot is an example of
(1)Water jet refrigeration (2)Evaporation refrigeration
(3)Vapour absorption refrigeration (4)Vapour compression refrigeration
Ans(2)

35. In a series RLC circuit at resonance:
(1) Current is maximum, pf is zero (2) Current is Maximum, pf is unity
(3) Current is minimum, pf is unity (4) None of these
Ans(2)

36. Thermionic emission of electrons from a heated electrode is due to
(1)electromagnetic field (2)electrostatic field
(2)high temperature (4)photo electric effect
Ans(2)

37. Five people must be lifted in an elevator over a height of 100 m. The work is found to be 341.2 KJ and the gravitational acceleration is 9.75m/sec^2. the average mass per person is
(1)65kg (2) 72kg (3) 70kg (4) 67.5kg
Ans(3)

Note: Word done = mgh→ 341.2 x 1000 = 5xm x9.81x100

38. The internal energy of an ideal gas is
(1)a function of temperature alone (2) a function of pressure
(3)a function of volume (4) (1) and (2) above
Ans(1)

Note: And **the internal energy of an ideal gas** is independent of volume at constant temperature. **The enthalpy** and **internal energy of an ideal gas** were asserted to be **functions** of temperature only.

39. One micron is equal to –
(1) 0.1 mm (2) 0.01 mm (3) 0.0001 mm (4)10^{-6}m
Ans(4)

40. Which class of amplifiers operates with least distortion?
(1)Class A (2)Class B (3)Class C (4)Class AB
Ans(1)

Note: Class A **amplifier** has the highest linearity and the **lowest distortion**. The amplifying element is always conducting and close to the linear portion of its transconductance curve.

41. The passage of current in an electrolyte is due to the movement of
(1)electrons (2)molecules (3)atoms (4)ions
Ans(4)

42. FM broadcast is done using
(1)medium waves (2) short waves
(3) VHF and UHF waves (4) micro waves
Ans(3)

43. The force equal in magnitude and opposite in direction to the resultant is known as the
(1)parallel force (2) equilibrant
(3)downward force (4) gravitational force
Ans(2)

44. A gas does not have a definite shape or fixed volume, because the molecules are
(1) at rest (2). in linear motion
(3) in oscillator motion (4) in random motion
Ans(4)

45. In electroplating the desired metal to be coated (like nickel, gold, silver etc) on an object is taken as the
(1) electrolyte (2)cathode (3)anode (4)None
Ans(3)

46. In electroplating the article to be coated is taken as the
(1)electrolyte (2)cathode (3)anode (4)None
Ans(2)

Note: A Zener diode is a semiconductor device that permits current to flow in either

a forward or reverse direction. The diode consists of a special, heavily doped p-n junction, designed to conduct in the reverse direction when a certain specified voltage is reached.

The Zener diode has a well-defined reverse-breakdown voltage, at which it starts conducting current, and continues operating continuously in the reverse-bias mode without getting damaged. Additionally, the voltage drop across the diode remains constant over a wide range of voltages, a feature that makes Zener diodes suitable for use in voltage regulation.

Zener diode applications

Zener diodes are used for voltage regulation, as reference elements, surge suppressors, and in switching applications and clipper circuits.

https://www.digikey.in/en/maker/blogs/zener-diode-basic-operation-and-applications

47. The primary function of a filter capacitor in a power supply is to

(1)minimize the A.C. input variation
(2)suppress the variation of the output voltage
(3)stabilize the D.C. level of the output voltage
(4)remove ripples from the rectified output

Ans(4)

48. Cryogenics is
(1)study of crystal
(2) study of genetics
(3)science of very low temperature
(4) study of colours

Ans(3)

49. The main purpose of using core in a transformer is to
(1) decrease iron losses
(2) prevent eddy current loss
(3) eliminate magnetic hysteresis
(4)decrease reluctance of the common magnetic flux path

Ans(4)

50. Heat flews through liquids and gases by:
(1) conduction
(2) convection
(3) radiation
(4) a combination of these

Ans(2).

50.1 Heat flews through solids by:

(1) conduction (2) convection

(3) radiation (4) a combination of these

Ans(1).