

1. What is the power factor?

Power factor (PF) is the ratio of working power (Real Power), measured in kilowatts (kW), to apparent power, measured in kilovolt amperes (kVA). Apparent power is also known as demand. The ideal power factor is unity, or one.

2. Why do we want to keep power factor 1? And what is the Method to maintain the pf?

It is because of the load with a power factor of 1.0 results in the most efficient loading of the supply.

The following devices and equipment are used for Power Factor Improvement.

- Static Capacitor
- Synchronous Condenser
- Phase Advancer

3. What is the difference between Electrical and Electronics Engineering?

There are various ways that you can express or define electrical and electronics engineering. But I would define it as:

Electrical Engineering is the study of the behavior of electrical charge carriers in Conductors. There is only one charge carrier and that is an electron. All the electrical circuit functioning does involve the movement of electrons only.

Electronics Engineering is the study of the behavior of electrical charge carriers in Semi-Conductors. There are two charge carriers in semiconductors, namely electron, and hole. Electron is a negative charge carrier and Hole is a positive charge carrier. All the electronic circuits functioning does involve the movement of both these charge carriers. Electronic circuits are designed to process, modulate, transmit and demodulate information. The raw signal is converted to an electrical signal like voltage and currents.



Also, electronics deal with mV, mA, and mW. Whereas, electrical deals with kV, kA, and MW.

4. What is the difference between a battery and a capacitor?

A battery or A Capacitor is both energy storage elements. But, they are indeed very different. The given table below is the difference that you can read and learn.

Check the Table here: <https://electricalguide360.com/electrical-engineering-interview-questions-and-answers/>

5. What is the difference between real ground and virtual ground?

A real ground is a zero potential point where all the current actually sinks to the negative terminal of the supply.

Virtually ground means, it's not physically connected to Ground but the voltage at that point/node is '0V'. The current doesn't sink to the negative terminal of supply from this point.

6. What is the fundamental difference between EMF(Electro Motive Force) and PD(Potential Difference)?

Check Your Answer here: <https://electricalguide360.com/electrical-engineering-interview-questions-and-answers/>

7. What is the motor starter and why do we need a starter to install a motor?

A motor starter is an electric device by which we can start and stop the motor by turning ON/OFF. It provides protection to the motor against over voltage and under voltage from the relay.

The main reason for using the starter is to limit the starting current and at the same time, the starter function is to protect the motor.

8. What is the 'Q' factor in Electrical and Electronics Engineering?

The ratio between Reactance and Resistance is called Q Factor or Quality Factor. Q Factor may be defined as the ratio between stored energy and Energy dissipated per cycle in a Circuit. The quality factor measures the performance of a coil, a capacitor, or an inductor in terms of its losses and resonator bandwidth.

9. Difference between Uni-lateral and Bi-lateral circuits and elements?

Unilateral Element: Conduction of current in one direction is termed as unilateral (example: Diode, Transistor) element.

Bilateral Element: Conduction of current in both directions in an element (example: Resistance; Inductance; Capacitance) with the same magnitude is termed as a bilateral element.

10. What is better in three-phase and 1-phase?

There is nothing called better. The only difference is in their use of the application. Single-phase systems are actually more efficient than 3-phase systems in low-power applications. Whereas, three-phase power supplies are more efficient for large power applications.

For example: For a normal household power utilization, a single-phase is being used in most cases.

11. What is Skin Effect?

The non-uniform distribution of electric current over the surface or skin of the conductor carrying a.c is called the skin effect. In other words, the concentration of charge is more near the surface as compared to the core of the conductor. The ohmic resistance of the conductor is increased due to the concentration of current on the surface of the conductor. Skin effect increases with the increase in frequency.

12. Star and delta connections?

The terminals of the three branches are connected to a common point. The network formed is known as **Star Connection**. The three branches of the network are connected in such a way that it forms a closed loop known as **Delta Connection**.

In a star connection, the starting and the finishing point ends of the three coils are connected together to a common point known as the **neutral point**. But in Delta connection, there is no neutral point.

13. What is the difference between AC and DC resistance?

AC Resistance

- In Simple words, Resistance in AC circuits is called Impedance or Overall resistance (Resistance, Inductive reactance, and Capacitive reactance).
- The AC resistance is always more than the DC resistance.
- Current distributes in a non-uniform way through the conductor cross-section area due to skin effect.

DC Resistance

- Capacitive and inductive reactances in DC circuits zero because there is no frequency in DC circuits, i.e. magnitude of DC current is constant. Therefore, only the original resistance of wire/conductor comes into play.
- Current distributes in a uniform way through the conductor cross-section area.

14. What is the difference between Active and passive components?

- Active components are those that **deliver** or **produce energy** or power in the form of a voltage or current. Passive components are those that **utilize or store energy** in the form of voltage or current.



- Examples of the active components are diodes, transistors, SCR, integrated circuits, etc. Similarly, examples of the passive components are resistor, capacitor, and inductor.
- Active components can control the **flow of current**, but passive components cannot control the flow of the current.

15. What is the use of lightning arrestors and how does it work?

The circuit which is protected from the strokes of lightning with the help of a protection device is known as a lightning arrester. When potentially dangerous lightning strikes, the arrester activates and diverts the lightning to the ground, where it will disperse harmlessly. It is installed near-critical appliances or points of entry, such as an electrical panel or near a generator or in buildings.

16. What is basic the difference between Step-up and Step-down transformers?

A transformer that increases the voltage from primary to secondary (more secondary winding turns than primary winding turns) is called a **step-up transformer**.

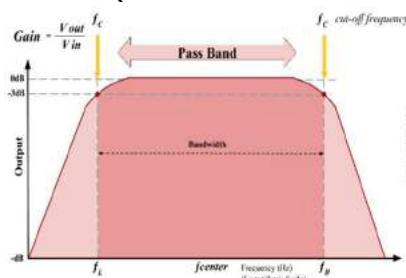
A transformer that decreases the voltage from primary to secondary (more primary winding turns than secondary winding turns) is called a **step-down transformer**.

17. What is Alternator and how does it work?

An alternator is an electrical generator that converts mechanical energy to electrical energy in the form of alternating current.

18. What do you mean by cut-off frequency?

Cutoff Frequency is a lower or upper limiting frequency. It is a boundary in a system's frequency response at which energy flowing through the system begins to be reduced (attenuated or reflected) rather than passing through.



19. What is a voltage regulator?

A voltage regulator is a system designed to automatically maintain a constant voltage.

20. Types of circuit breakers?

The types of transformers are:

- Air Magnetic Circuit Breakers
- Air Blast Circuit Breakers
- Oil Circuit Breakers
- Sulfurhexafluoride (SF₆) Circuit Breakers
- Vacuum Circuit Breakers

21. What is the BDV test of transformer oil? What is the standard BDV value?

BDV test means the **Breakdown Voltage Test**. This test is performed for verifying the dielectric strength of the oil of the transformer. Dielectric Strength is the maximum capacity to resist the voltage of insulating oil. This test demonstrates the dielectric Strength of Transformer Oil.

As per [IEC](#), the minimum BDV of transformer oil should be **30 KV** as per the transformer oil BDV test standard.

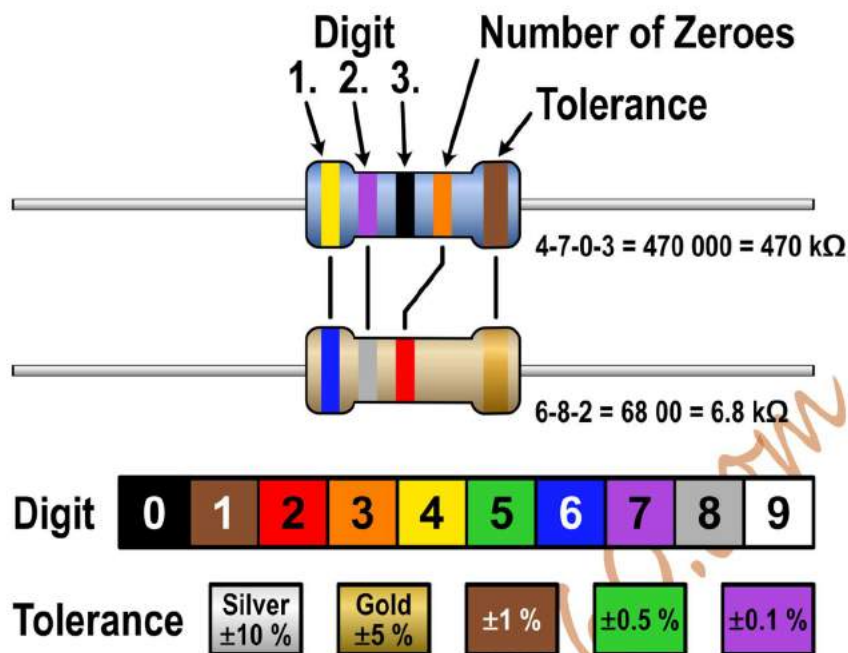
22. Explain about voltage divider, voltage doubler, voltage multiplier?

- **Voltage Divider:** In electronics, a voltage divider (also known as a potential divider) is a passive linear circuit that produces an output voltage (V_{out}) that is a fraction of its input voltage (V_{in}).
- **Voltage Doubler:** A *voltage doubler* is an electronic circuit that produces an output voltage that is double the input voltage.
- **Voltage Multiplier:** A *voltage multiplier* is an electrical circuit that converts AC electrical power from a lower voltage to a higher DC voltage, typically using a network of capacitors and diodes.





23. Color Coding of resistor?



24. Why transforms are rated in KVA instead of KW?

For this, check your answer here: [Why Transformers are Rated in KVA instead of KW?](#)

25. What is slip in Induction Motor (I.M)?

Slip in Induction Motor is the relative speed between the rotating magnetic flux and rotating rotor expressed in terms of per unit synchronous speed. The value of slip in induction motor is can never be zero.

26. What is synchronous speed?

The synchronous speed is the speed of the revolution of the magnetic field in the stator winding of the motor. The synchronous speed is a given by $N_s = 120f/P$

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