

QUIZ – ANSWER KEY

QUIZ NO: 109

TOPIC: ELECTRICAL ENGINEERING

DATE: 27/09/2022

1. In a circuit breaker, the basic problem is to ?

- [A] maintain the arc
- [B] extinguish the arc
- [C] transmit the large power
- [D] emit the ionizing electrons

Answer: B

Explanation:-

Arc extinguishing is one of the important applications of circuit breaker, because the arc not only causes damage to the equipment line, but also affects the personal safety. Therefore, it is necessary to extinguish the arc.

2. The arcing contacts in a circuit breaker are made up of ?

- [A] copper tungsten alloy
- [B] electrolytic copper
- [C] porcelain
- [D] Aluminium alloy

Answer: A

Join our social media



QUIZ – ANSWER KEY

Explanation:-

In a circuit breaker, the main contacts are usually made up of copper and conduct current in closed positions. Circuit breakers have low contact resistance and they are silver plated. **The arcing contacts are solid, resistant to heat** and are made up of copper tungsten alloy.

3. Arc in a circuit breaker behaves as ?

- [A] a capacitive reactance
- [B] an inductive reactance
- [C] a resistance increasing with voltage rise across the arc
- [D] a resistance decreasing with voltage rise across the arc

Answer: D

Explanation:-

The resistance of the arc is highly non-linear. So that it behaves as a **resistance decreasing with voltage rise across the arc.**

4. A fuse is connected with circuit ?

- [A] in series
- [B] in parallel
- [C] either in series or parallel
- [D] None of the above

Answer: A

Join our social media



QUIZ – ANSWER KEY

Explanation:-

Fuses are always connected in series with the **live wire**.

5. Protection by fuses is generally not used beyond ?

- [A] 10 A
- [B] 20 A
- [C] 50 A
- [D] 100 A

Answer: D

6. Which of the following power plants employs the Rankine cycle?

- [A] Nuclear power plant
- [B] Solar power plant
- [C] Thermal power plant
- [D] Hydro-electric power plant

Answer: C

Explanation:-

The Rankine cycle or Rankine Vapor Cycle is the process widely used by power plants such as **coal-fired power plants or nuclear reactors**. In this mechanism, a fuel is used to produce heat within a boiler, converting water into steam which then expands through a turbine producing useful work.

Join our social media



QUIZ – ANSWER KEY

7. The torque angle of a 3-phase synchronous motor depends on its _____ ?
- [A] Excitation
 - [B] Speed
 - [C] Load
 - [D] Supply voltage

Answer: C

Explanation:-

The torque angle of a 3-phase synchronous motor depends on its Load.

The rotor of a synchronous motor rotates in synchronism with the rotating flux of the stator. The increases in shaft load cause the rotor magnets to change their angular position with respect to the rotating flux. The torque angle is defined as

$$T = K \sin\delta$$

The angle δ is called torque angle, power angle, or load angle.

A synchronous motor operates at the same average speed for all values of the load from no load to peak load. When the load on a synchronous motor is increased, the motor slows down just enough to allow the rotor to change its angular position in relation to the rotating flux of the stator and then goes back to synchronous speed.

Similarly, when the load is removed. it accelerates just enough to cause the rotor to decrease its angle of lag in relation to the rotating flux, and then goes back to synchronous speed.

Torque Angle Characteristics of Synchronous Motor

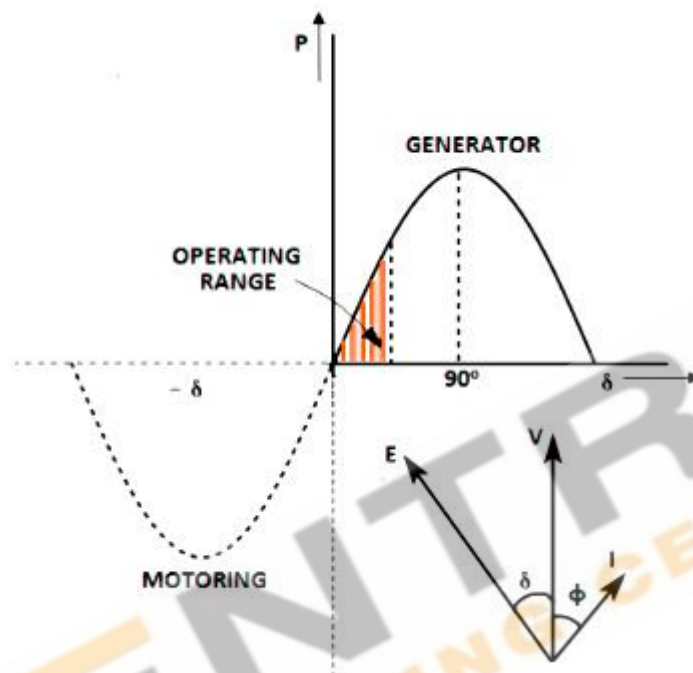
When the load is increased, the δ also increases and the rotor falls back more and more with respect to resultant, weakening the magnetic locking. At $\delta = 90^\circ$ the

Join our social media



QUIZ – ANSWER KEY

rotor comes out of synchronism and the corresponding torque pulling the rotor out of synchronism is called pull-out torque. The corresponding power is called pull-out power.



The motor comes to stop if the load is increased beyond the point when $\delta = 90^\circ$. The torque-angle characteristics for the synchronous machine are shown in Fig. for both motoring as well as generating action.

The δ is positive if the rotor field lags behind the resultant and is negative if the rotor field advances the resultant. The δ is positive in motoring action and negative in the generating action.

As the load on the synchronous motor increase, there is no change in its speed. But what gets affected is the load angle δ i.e. the angle by which the rotor axis retards with respect to the stator axis.

Hence as load increases, δ increases but speed remains synchronous.

[Join our social media](#)



QUIZ – ANSWER KEY

8. Permeance is analogous to an electrical circuit?

- [A] Conductance
- [B] Permittivity
- [C] Conductivity
- [D] Resistance

Answer: A

Explanation:-

- The permeance is analogous to **the conductance** in an electrical circuit. It is reciprocal of the reluctance (R) of the material in a magnetic circuit. Resistivity is numerically equal to the resistance of a substance having a unit area of cross-section and unit length.

9. 1 kcal is approximately equal to ?

- [A] 420 watt-hour
- [B] 4200 watt-sec
- [C] 4.2 joules
- [D] 420 joules

Answer: B

Explanation:-

1 kilocalorie means the energy it takes to raise the temperature of 1kg of water by 1°C.

1 kcal = 4.1868 kJ \approx 4200 watt-sec

Join our social media



QUIZ – ANSWER KEY

10. _____ braking is used where the load on the motor has very high inertia (e.g. in electric trains)?

- [A] Coasting
- [B] Plugging
- [C] Regenerative
- [D] Rheostatic

Answer: C

Explanation:-

Regenerative braking: In this method, no energy is drawn from the supply during braking period and some of the energy fed back to the supply system.

Join our social media

