

## Electrical Quiz - 2A

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11.What are the main advantages of nuclear fusion over nuclear fission?

No radioactive radiation, no nuclear waste, no nuclear weapons in the case of nuclear fusion, whereas all these evils are in nuclear fission. Fission is easier than fusion ,hence most of our reactors are of fission type.

12.What is the creepage distance?

The shortest path between two conductive paths or live to grounded portion.

Eg: Transformer bushing live and it's bottom body.

Rod gap arrester is used for protection of transformer bushings against lightning and surges.

13.What is tracking in power system ?

A process that produces a partially conductive path due to improper creepage distance is called tracking which affects discs, Post Type insulators and transformer CT bushings and lead to flash overs.

14.What are the reasons for tracking?

(i)Humidity.

(ii)Contaminations.

(iii)Corrosive chemicals.

(iv)Location altitude.

15. Why star connections are more common in U/G system?  
Since these connections are less more vulnerable to ferro resonance.

16. What is skin effect of AC current?

The effect of flowing current in the outer skin of the conductor due to it's own alternating magnetic field. That is why no skin effect in DC current.

17. What is VAR?

The reactive power required to create the magnetic coupling needed to produce the actual work.

[18.To](#) which the active power(kW) is related?

Directly proportional to the torque applied to the rotor shaft either by turbo turbine, hydro turbine, gas turbine and wind turbine .

[19.To](#) which the reactive power(kVAR) is related?

Generator's excitation, Capacitor, EHV Transmission line compensation.

20. How VAR is increased?

If the excitation current of the Generator is increased (over excited), the magnetic coupling of the rotor with the stator magnetic field gets increased and MVAR is raised.

21. Which fault level will be better for time grading for O/C relays and why?

The phase to phase fault level (86.6 % of three phase

fault level) will be opt for time grading the O/C relays since three phase faults are rare.No time grading for E/L relays.

22.Does the load current of a line have any effect on the fault current?

No, only the fault impedance from the source to the fault, influence the fault current and will be inversely proportional to the fault impedance.

23.Why phase to ground fault current is higher than the three phase fault current ?

The Delta/Star is only the source of Zero sequence current. As, the fault impedance of 3 phase fault includes the impedance of transmission line and sub transmission lines, whereas Zero sequence impedance does not and hence the positive sequence fault impedance is higher than the zero sequence impedance and hence zero sequence current(line to ground ) is higher than the 3 phase fault current.

Of course,it also depends upon how far the ground fault occurs.

24.One kWhr is equal to how much kCal and vice versa?

One kWhr = 859.85 kCal(3412 btu).

Say, 860 kCal.

One kcal = 4.184 kilo joules(4.184 kWatt.Sec)=4.184/3600= 0.0012 kWhr.

25.What is magneto hydro dynamics?

Magneto hydro dynamics employs a magnetic field to drive an ionised field. A magneto hydrodynamic (MHD) generator works on this principle, which transforms thermal & kinetic

energy into power directly without moving parts.

26. Why transformer produce humming sound?

Due to magnetostriction property of the ferromagnetic materials.

27. What is the frequency of humming sound of the transformer?

Twice the power system operating frequency of the transformer i.e., the 50 Hz transformer produces humming sound at 100 Hz.

28. What does the difference in transformer humming indicate?

Difference in humming sound indicates the presence of harmonics in the load apart from load variations.

In addition to the fundamental frequency humming, harmonics are also doubled creating humming different from 100 Hz.

29. What are the main emissions from fossil fuel plants?

The fossil fuel (coal, lignite, gas, oil) thermal plants emit green house gases apart from sulphurous oxides (which cause acid rain), nitrogen oxides (NO<sub>x</sub>), Particulate Matter (PM), condensable PM, Mercury (Hg), trace metals and radioactive nucleoids.

30. What is the speed of lightning in OH lines?

1000 feet/micro sec.

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