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Section : **Power Systems**

Q.1 The bus admittance matrix Y_{BUS} of a power system is not _____

A. Symmetric

B. A square matrix

C. A Full Matrix

D. Having dominant diagonal elements

Ans
✗ 1. A
✗ 2. B
✓ 3. C
✗ 4. D

Question ID : **5834932013**

Q.2 An infinite bus is characterised by

A. Z=0; H=∞

B. Z=∞; H=0

C. Z=0; H=0

D. Z=∞; H=∞

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932022**

Q.3 Knee point voltage of a CT is dependent on _____

A. B, f, N_{Py}

B. B, f, N_{Sy}

C. N_{Py} and N_{Sy}

D. None of the above

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932036**

Q.4 On unit mass basis, the ampacity of

A. Aluminium is twice that of copper
B. Aluminium is equal to that of copper
C. Aluminium is 60% of that of copper
D. Aluminium is thrice that of copper

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932020**

Q.5 Which of the following cause of overvoltage problem in power system is resolved using surge absorber?

A. ferro-resonance

B. current chopping

C. lightning strike to transmission line

D. switching of unloaded line

Ans
✘ 1. A
✔ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932019**

Q.6 Transient stability is generally improved by using _____

A. High speed governors on machines
B. Low inertia machines
C. Dispensing with neutral grounding
D. None of the above

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932023**

Q.7 The power frequency control is slow due to _____

A. Turbine and generator moment of inertia

B. Turbine and generator torque

C. Turbine and generator force

D. All of the above

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932024**

Q.8 Mineral oil is best suited for transformer due to one of the following_____

A. High viscosity and dielectric strength

B. ε_r of mineral oil is close to the main insulation over winding and hence less stress on main insulation while replacing air

C. Not affected by environmental conditions

D. All of the above

Ans
✘ 1. A
✔ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932015**

Q.9 Which of the following ELCB rating is recommended for protection against indirect contact?

A. 30 mA

B. 100 mA

C. 300 mA

D. 500 mA

Ans
✘ 1. A
✔ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932037**

Q.10 In an alternator, field excitation has failed during operation. The alternator functions momentarily as

A. synchronous motor

B. induction generator

C. synchronous condenser

D. synchronous generator

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932026**

Q.11 A FACTS controller can control the power flow as required, by controlling _____

A. Capacitance
B. Frequency
C. Phase angle
D. Power factor

Ans
✗ 1. A
✗ 2. B
✓ 3. C
✗ 4. D

Question ID : **5834932056**

Q.12 What is steady state stability limit?

A. The maximum flow of power through a particular point in the power system without loss of stability when small disturbances occur.

B. The maximum power flow possible through a particular component connected in the power system.

C. The maximum flow of power through a particular point in the power system without loss of stability when sudden disturbances occur

D. All of the above

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932025**

Q.13 The in-rush current of a transformer at no load is maximum if the supply voltage is switched on

A. at zero voltage value

B. at peak voltage value

C. at V/2 value

D. None of the above

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932017**

Q.14 BIL of 132kV transformer on HT side is

A. 145 kV

B. 550 kV

C. 750 kV

D. 1050 kV

Ans
✘ 1. A
✔ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932018**

Q.15 Voltage across the various discs of a string of suspension insulator having identical discs is different due to

A. Surface leakage currents

B. Series capacitance

C. Series and shunt capacitance

D. Shunt capacitance to ground

Ans
✘ 1. A
✘ 2. B
✘ 3. C
✔ 4. D

Question ID : **5834932016**

Q.16 Voltage dips cannot be caused by which of the following

A. Switching on of large loads

B. Local and remote faults

C. Inductive loading

D. Capacitive switching

Ans
✗ 1. A
✗ 2. B
✗ 3. C
✓ 4. D

Question ID : **5834932044**

Q.17 The property of surge protection device is to have_____ V/I characteristics

A. Linear

B. Highly linear

C. Non-linear

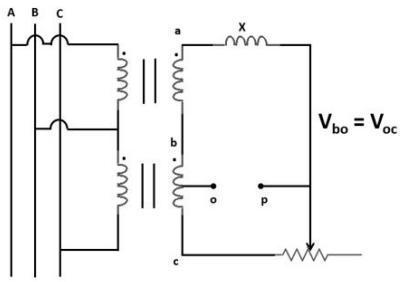
D. Highly non-linear

Ans
✗ 1. A
✗ 2. B
✗ 3. C
✓ 4. D

Question ID : **5834932032**

Q.18 Under balanced condition, when positive sequence voltages are applied, $V_{op} = 0$.

The circuit, given below, measures



A. Negative sequence voltage and $V_{op} = \frac{3}{2} V_2$

B. Zero sequence voltage and $V_{op} = \frac{3}{2} V_0$

C. Negative sequence voltage and $V_{op} = 3V_2$

D. Zero sequence voltage and $V_{op} = 3V_0$

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932040**

Q.19 The fault impedance at a downstream bus is 0.04 pu per MVA base on a base of 415 V. The fault MVA if the circuit voltage is increased to 433 V is _____

A. 121.21 MVA

B. 52.241 MVA

C. 16.784 MVA

D. 27.215 MVA

Ans
✗ 1. A
✗ 2. B
✗ 3. C
✓ 4. D

Question ID : **5834932039**

Q.20 In an effectively grounded system _____

A. $\frac{R_0}{X_1} < 1$

B. $\frac{X_1}{R_0} < 1$

C. $\frac{X_0}{X_1} < 10$

D. $\frac{X_1}{X_0} < 10$

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932045**

Q.21 The worst-case overvoltage developed as a result of current chopping occurred during disconnection of 220/132 kV 250MVA, 50Hz power transformer having magnetising reactance of jX_m ohms per phase and system capacitance of C pF/ phase is ($I_{no\ load}$=1% of I_{load})

A. $\sqrt{\frac{X_m}{2\pi fC}}$ x $9.2\text{x}10^6$

B. $\sqrt{2}\sqrt{\frac{X_m C}{2\pi f}}$ x 9.2

C. $\frac{\sqrt{3}}{2} \cdot \sqrt{\frac{X_m C}{2\pi f}}$ x 9.2

D. 220kV

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932049**

Q.22 What gases are generated in a transformer in large proportions during overloading?

A. CO and CO2

B. N_2 and O_2

C. ethylene

D. none of the above

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932038**

Q.23 A step-up chopper is fed with 200V. The conduction time of the thyristor is 200μs and the required output is 600V. If the frequency of operation is kept constant and the pulse width is halved, what will be the new output voltage?

A. 600 V

B. 300 V

C. 400 V

D. 200 V

Ans
✘ 1. A
✔ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932061**

Q.24 Shunt compensation in an EHV line is used to improve

A. Stability and fault level

B. Fault level and voltage profile

C. Voltage profile and stability

D. All of the above

Ans
✘ 1. A
✘ 2. B
✔ 3. C
✘ 4. D

Question ID : **5834932046**

Q.25 In the event of fault, the RMS value of symmetrical breaking component of fault current is 10 kA and the DC component is 5 kA. The asymmetrical breaking current is _____

A. 15 kA
B. 11.18 kA
C. 14 kA
D. 13 kA

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932035**

Q.26 The L-G fault current of a star connected 3 phase alternator is to be limited to 50% of rated current. The NGR value should be

A. $Z_n = \frac{2E_{ph}}{I_r}$

B. $Z_n = \frac{6E_{ph}}{I_r}$

C. $Z_n = \frac{6E_{ph}}{I_r} - \frac{(Z_1+Z_2+Z_0)}{3}$

D. $Z_n = \frac{2E_{ph}}{I_r} - \frac{(Z_1+Z_2+Z_0)}{3}$

Ans
✗ 1. A
✗ 2. B
✗ 3. C
✓ 4. D

Question ID : **5834932041**

Q.27 A 120 MW turbo alternator is supplying power to 80 MW load at lagging pf. Suddenly the steam supply to the turbine is cut off and the alternator remains connected to the supply network and the field supply also remains ON. What will happen to the alternator?

A. The stator winding of the alternator will burn
B. The rotor winding of the alternator will burn
C. The alternator will continue to run as a synchronous motor rotating in the same direction
D. The alternator will continue to run as a synchronous motor rotating in the opposite direction

Ans
✗ 1. A
✗ 2. B
✓ 3. C
✗ 4. D

Question ID : **5834932034**

Q.28 Disadvantage with series compensation is _____

A. Reduce the Voltage stability

B. Increase in fault current

C. Reduce the power factor

D. Increase the voltage drop

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932053**

Q.29 Power system insulation problem involves

A. Selection of basic insulation level of system equipment and lightning arrestor

B. Determination of line insulation

C. Capacitance of earth and subsequent grounding

D. None of the above

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932014**

Q.30 Which of the following statement is not correct for the use of bundled conductor in transmission lines?

A. Control of voltage gradient

B. Reduction in corona loss

C. Reduction in radio interference

D. No influence on Surge Impedance Loading (SIL)

Ans
✗ 1. A
✗ 2. B
✗ 3. C
✓ 4. D

Question ID : **5834932012**

Q.31 A single phase TL has copper conductor of 0.775 cm^2 cross section through which 200kW at UPF at 330 V is to be maintained. If the efficiency of transmission line is 90%, then the minimum length of TL is _____ (in km and take specific resistance to be 1.785 μΩ/cm).

A. 13.6 km

B. 14 km

C. 136 km

D. 16.4 km

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932021**

Q.32 Lightning arresters are used in power system to protect electrical equipments against

A. direct strokes of lightning

B. over-voltages due to indirect lightning stroke

C. power frequency over-voltages

D. over-currents due to lightning

Ans
✘ 1. A
✘ 2. B
✔ 3. C
✘ 4. D

Question ID : **5834932033**

Q.33 What is transient stability limit?

A. The maximum flow of power through a particular point in the power system without loss of stability when small disturbances occur.

B. The maximum power flow possible through a particular component connected in the power system.

C. The maximum flow of power through a particular point in the power system without loss of stability when large and sudden disturbances occur

D. All of the above

Ans
✘ 1. A
✘ 2. B
✔ 3. C
✘ 4. D

Question ID : **5834932028**

Q.34 In which of the following both frequency and voltage can be controlled?

A. Inverter, cyclo-converter and AC voltage controller

B. Cyclo-converter and AC voltage controller

C. Inverter and cyclo-converter

D. Inverter and AC voltage controller

Ans
✗ 1. A
✗ 2. B
✓ 3. C
✗ 4. D

Question ID : **5834932055**

Q.35 The delta connected Power Factor Correction bank works on 400 V, 50 Hz supply is detuned by 7%. The voltage across the capacitor bank and resonant frequency of the series LC branch after detuning is

A. 430 V, 210 Hz
B. 400 V, 210 Hz
C. 430 V, 189 Hz
D. 400 V, 189 Hz

Ans
✗ 1. A
✗ 2. B
✓ 3. C
✗ 4. D

Question ID : **5834932051**

Q.36 The _____, by means of angularly unconstrained series voltage injection is able to control selectively the transmission line voltage, impedance and phase angle or alternatively the active and reactive power.

A. UPFC
B. SSSC
C. TCSC
D. None of the above

Ans
✓ 1. A
✗ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932050**

Q.37 Cogging and crawling phenomena in induction machines are associated with

A. Cage induction machines and they are essentially the same

B. The former during starting and the latter at a fraction of its rated speed

C. The former at a fraction of its rated speed and the later during starting

D. None of the above

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932054**

Q.38 FACTS controllers can enable a line to carry power close to its_____

A. Full efficiency
B. Thermal rating
C. Dielectric rating
D. None of the above

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932052**

Q.39 The FC-TCR consists of _____ and _____

A. Fixed capacitor and fixed inductor
B. Variable capacitor and fixed inductor
C. Variable capacitor and variable inductor
D. Fixed capacitor and variable inductor

Ans
✗ 1. A
✗ 2. B
✗ 3. C
✓ 4. D

Question ID : **5834932058**

Q.40 A 10t crane hoisting application is driven by VSI fed induction motor. The crane needs to be operated at 10m per minute (hoist speed). The Dynamic braking resistor rating required for the application is,

A. 10kW
B. 16.35kW
C. 22 kW
D. 9.81 kW

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932059**

Q.41 Load shedding is done based on

A. under frequency settings in co-ordinated frequency relays

B. under frequency settings and $\frac{df}{dt}$ settings in co-ordinated frequency relays

C. $\frac{df}{dt}$ and $\frac{dv}{dt}$ settings in co-ordinated frequency relays

D. under voltage relays

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932030**

Q.42 Unified Power flow controller (UPFC) is a combination of _____

A. STATCOM and TCSC
B. STATCOM and SSSC
C. SSSC and TSC
D. TSSC and TCR

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932060**

Q.43 IEEE 1159 defines voltage swell as an event when supply voltage is _____

A. More than 1.1 pu for a duration of <1Min

B. More than 0.1 pu for a duration of >30s

C. More than 0.9 pu for a duration of <1 Min

D. More than 0.8 pu for a duration of <1 Min

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932042**

Q.44 Shunt connected, fixed or switched capacitors are applied to _____

A. Maintain the voltage levels under light load conditions

B. Maintain the voltage levels under any load conditions

C. Maintain the voltage levels under heavy load conditions

D. Maintain the voltage levels under no load conditions

Ans
✘ 1. A
✘ 2. B
✔ 3. C
✘ 4. D

Question ID : **5834932047**

Q.45 Sweep frequency response analysis test is conducted on transformers to

A. determine dielectric distortion factor of oil

B. determine the presence of moisture in the paper insulation of oil filled transformers

C. determine dissolved gases in oil

D. detect the deformations and displacements in the windings and core

Ans
✘ 1. A
✘ 2. B
✘ 3. C
✔ 4. D

Question ID : **5834932043**

Q.46 STATCOM is a _____ regulating device

A. Voltage
B. Current
C. Both Voltage and Current
D. Power factor

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932048**

Q.47 The torque developed in an induction machine is given by the expression

A. $T_d=K_1(\Psi^d i_q+ \Psi^q i_d)$ when d-axis component of rotor current is aligned with Ψ^d axis

B. $T_d=K_2(\Psi^d i_q)$ when d-axis component of rotor current is aligned with Ψ^d axis

C. $T_d=K_1(i^d i_q+ i^q i_d)$

D. all the above

Ans
✘ 1. A
✔ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932029**

Q.48 Two synchronous generators operate in parallel to supply a load of 200 MW. The capacities of the machines are 100 MW and 200 MW and both have governor droop characteristics of 4% from no-load to full load. The load shared by 100 MW & 200 MW machines are_____

A. 66.6 MW, 133.3 MW
B. 133.3 MW, 66.6 MW
C. 50 MW, 150 MW
D. 150 MW, 50 MW

Ans
✔ 1. A
✘ 2. B
✘ 3. C
✘ 4. D

Question ID : **5834932031**

Q.49 The transient stability limit of a power system be improved by adding _____ in system.

A. Series resistance

B. Series capacitor

C. Series inductor

D. Shunt resistance

Ans
✗ 1. A
✓ 2. B
✗ 3. C
✗ 4. D

Question ID : **5834932027**

Q.50 In which of the following choppers do the voltage and current remain negative?

A. Type - A

B. Type - C

C. Type - E

D. Type - D

Ans
✗ 1. A
✗ 2. B
✓ 3. C
✗ 4. D

Question ID : **5834932057**