1. Generator transformers are _____

a) Step-up transformers

b) Step-down transformers

c) Auto-transformers

d) One-one transformers

View Answer

Answer: a

Explanation: Generator transformers are employed in generating stations to connect the power station to the transmission system. Generator transformers step up the generator output at low voltage to the voltage at which the transmission system operates.

6. For a single phase transformer operating at normal operating conditions has useful flux of 1 Wb. If the machine is loaded at 0.8 p.f., then its mutual flux _____

a) may decrease to 0.98 Wb

b) remains constant

c) may increase 1.02 Wb

d) may decrease to 0.8 Wb

View Answer

Answer: a

Explanation: The mutual flux will decrease by a very small amount.

3. A single phase transformer has emf per turn having 2310/220 V, 50Hz transformer as 13 V. Then the estimated primary turns will be?

a) 189 turns

b) 179 turns

c) 176 turns

d) 190 turns

View Answer

Answer: a

Explanation: N2 = Total secondary voltage/Emf per turn

= 220/13 = 16.92 = 17(approx)

For N2 = 17, N1 = 178.5. But it is not an integer, so this approximation is wrong.

If N2 = 18, N1=189 turns.

15. Energising the transformer primary from a triangular wave flux makes the output voltage as _____

a) square wave shifted by 90°

b) a sine wave

c) a triangular wave

d) a square wave

View Answer

Answer: d

Explanation: E = -N*dϕ/dt.

Differentiation of triangular wave results in square wave.

13. In a single phase transformer,the no-load current lags the applied voltage by _____

a) 90°

b) about 75°

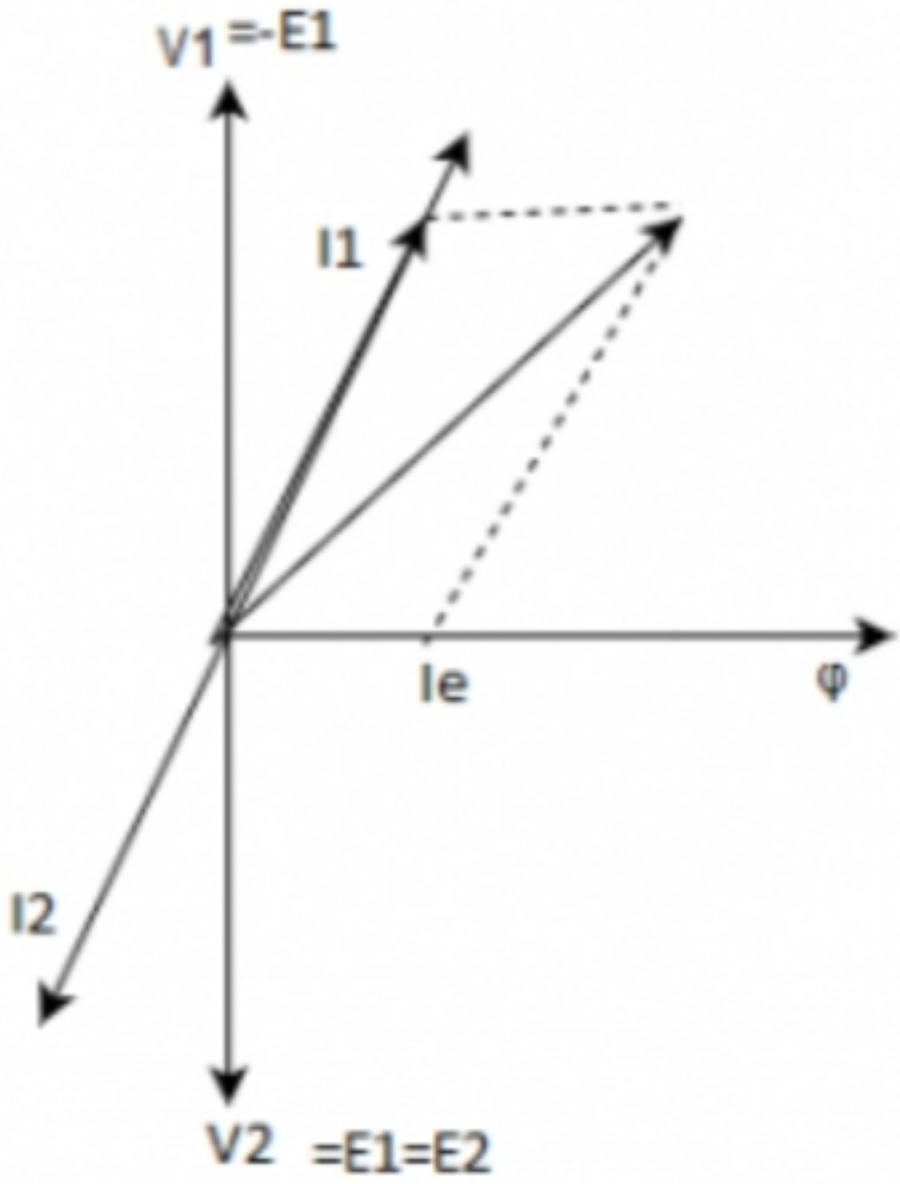
c) 0

d) about 110°

View Answer

Answer: b

Explanation: Check the phasor diagram.



4. If a transformer is fed from a 220V and dc supply rather than a 1-phase ac supply, then the transformer will _____

a) burn its windings

b) operate normal

c) will not operate

d) will give very small leakage flux

View Answer

Answer: a

Explanation: Dc is nothing but ac at zero frequency. So the reactance offered will be zero at dc and the current will be limited only by the small resistance of the winding which will produce very high amount of current to flow through the windings, so burning them up.

3. Transformer action requires a _____

a) constant magnetic flux

b) increasing magnetic flux

c) alternating magnetic flux

d) alternating electric flux

View Answer

Answer: c

Explanation: As per the Faraday's laws, the emf will be induced when flux is time varying as in transformer, there is no moving part.

7. The flux involved in the emf equation of a transformer has _____

a) rms value

b) average value

c) total value

d) maximum value

View Answer

Answer: d

Explanation: The flux is always taken at its peak in the practical calculation cases.

6. For a single phase transformer operating at normal operating conditions has useful flux of 1 Wb. If the machine is loaded at 0.8 p.f., then its mutual flux _____

a) may decrease to 0.98 Wb

b) remains constant

c) may increase 1.02 Wb

d) may decrease to 0.8 Wb

View Answer

Answer: a

Explanation: The mutual flux will decrease by a very small amount.

5. If a transformer is fed from a dc rather than a 1-phase ac supply, then the transformer will _____

a) burn its windings
b) operate normal
c) will not operate
d) will give very small leakage flux

View Answer

Answer: a
Explanation: Dc is nothing but ac at zero frequency. So the reactance will be zero and the current will be limited solely by the small resistance of the winding which will produce very high amount of current to flow through the windings, so burning them up.

4. A single phase transformer has emf per turn having 2310/220 V, 50Hz transformer as 13 V. The core area is(in square cm)?

a) 393

b) 277.8

c) 358.92

d) 450.03

View Answer

Answer: a

Explanation: Emf per turn = 1.44*f*flux density * Area*N2

Area = 220/(18*1.44*50*1.4) = 393 sq.cm.

3. A single phase transformer has emf per turn having 2310/220 V, 50Hz transformer as 13 V. Then the estimated primary turns will be?

a) 189 turns

b) 179 turns

c) 176 turns

d) 190 turns

View Answer

Answer: a

Explanation: N2 = Total secondary voltage/Emf per turn

= 220/13 = 16.92 = 17(approx)

For N2 = 17, N1 = 178.5. But it is not an integer, so this approximation is wrong.

If N2 = 18, N1=189 turns.

1. In a transformer if the frequency of the supply is varied then the magnetizing current in the core also varies.

a) True

b) False

View Answer

Answer: b

Explanation: The magnetizing current does not depend on the frequency of the supply fed to it.

1. A three-phase slip ring induction motor is fed from the rotor side with the stator winding short-circuited. The frequency of the current flowing in the short-circuited stator is _____

a) Slip frequency
b) Supply frequency
c) The frequency corresponding to rotor speed
d) Zero

View Answer

Answer: a
Explanation: The relative speed between rotor magnetic field and stator conductors is sip speed and hence the frequency of induced e.m.f is equal to slip frequency.

2. An 8-pole, 3-phase, 50 Hz induction motor is operating at a speed of 720 rpm. The frequency of the rotor current of the motor in Hz is _____

a) 2

b) 4

c) 3

d) 1

View Answer

Answer: a

Explanation: Given a number of poles = 8. Supply frequency is 50 Hz. Rotor speed is 720 rpm. $N_s = 120 \times f \div P = 120 \times 50 \div 8 = 750$ rpm. $S = N_s - N_r \div N_s = 750 - 720 \div 750 = .04$. $F_2 = sf = .04 \times 50 = 2$ Hz.

3. Calculate the phase angle of the sinusoidal waveform $z(t)=78\sin(456\pi t+2\pi\div78)$.

a) $\pi\div39$

b) $2\pi\div5$

c) $\pi\div74$

d) $2\pi\div4$

View Answer

Answer: a

Explanation: Sinusoidal waveform is generally expressed in the form of $V=V_m\sin(\omega t+\alpha)$ where V_m represents peak value, ω represents angular frequency, α represents a phase difference.

7. The frame of an induction motor is made of _____

a) Aluminum

b) Silicon steel

c) Cast iron

d) Stainless steel

View Answer

Answer: c

Explanation: The frame of an induction motor is made of cast iron. The power factor of an induction motor depends upon the air gap between stator and rotor.

9. In an induction motor, when the number of stator slots is equal to an integral number of rotor slots _____

a) There may be a discontinuity in torque slip characteristics

b) A high starting torque will be available

c) The maximum torque will be high

d) The machine may fail to start

View Answer

Answer: d

Explanation: When the number of stator slots is an integral multiple of a number of rotor slots the machine fails to start and this phenomenon is called cogging.

10. A 3-phase induction motor runs at almost 1000 rpm at no load and 950 rpm at full load when supplied with power from a 50 Hz, 3-phase supply. What is the corresponding speed of the rotor field with respect to the rotor?

a) 30 revolution per minute

b) 40 revolution per minute

c) 60 revolution per minute

d) 50 revolution per minute

View Answer

Answer: d

Explanation: Supply frequency=50 Hz. No-load speed of motor = 1000 rpm. The full load speed of motor=950 rpm. Since the no-load speed of the motor is almost 1000 rpm, hence synchronous speed near to 1000 rpm. Speed of rotor field=1000 rpm. Speed of rotor field with respect to rotor = 1000-950 = 50 rpm.

1. What will happen if DC shunt motor is connected across AC supply?

a) Will run at normal speed

b) Will not run

c) Will Run at lower speed

d) Burn due to heat produced in the field winding

View Answer

Answer: d

Explanation: In case of parallel field connection, it won't rotate at all and will start humming and will create vibrations, as a torque produced by positive and negative cycle will cancel out each other. DC motor will be heated up and it may burn.

2. What will happen if the back emf of a DC motor vanishes suddenly?

a) The motor will stop

b) The motor will continue to run

c) The armature may burn

d) The motor will run noisy

View Answer

Answer: c

Explanation: If back emf vanishes suddenly, motor circuit will try to retain back emf by drawing more current from supply. If supplying unit didn't trip down by this time, excess current in armature may heat up the armature.

3. What will happen, with the increase in speed of a DC motor?

a) Back emf increase but line current falls.

b) Back emf falls and line current increase.

c) Both back emf as well as line current increase.

d) Both back emf as well as line current fall.

View Answer

Answer: a

Explanation: In case of DC motor, the speed is proportional to the back emf ($Ea \propto N$). So, with the increase in speed, the back emf also increases. Therefore, armature current is also decreased, in case of series motor, armature current is equal to the line or load current.

6. Direction of rotation of motor is determined by _____

a) Faraday's law

b) Lenz's law

c) Coulomb's law

d) Fleming's left-hand rule

View Answer

Answer: d

Explanation: Flemings laws can be summarized as whenever, a current carrying conductor comes under a magnetic field, there will be a force acting on the conductor and on the other hand, if a conductor is forcefully brought under a magnetic field, there will be an induced current in that conductor.

7. The current drawn by the armature of DC motor is directly proportional to _____

a) Torque

b) Speed

c) The voltage across the terminals

d) Cannot be determined

View Answer

Answer: a

Explanation: From the equation of torque generated in a DC machine, we know that in both DC motor and DC generator, current drawn is directly proportional to the torque required by the machine.

11. In which of the following case we will get maximum power?

a) E_a = 2 x supply voltage

b) E_a = supply voltage

c) Supply voltage = 2 x E_a

d) supply voltage = 4 x E_a

View Answer

Answer: c

Explanation: For a motor, from power equation it is known that,

1. **The purpose of providing an iron core in a transformer is to**

A. provide support to windings

B. reduce hysteresis loss

C. decrease the reluctance of the magnetic path

D. reduce eddy current losses

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

2. A good voltage regulation of a transformer means

A. output voltage fluctuation from no load to full load is least

B. output voltage fluctuation with power factor is least

C. difference between primary and secondary voltage is least

D. difference between primary and secondary voltage is maximum

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

3. If the percentage impedances of the two transformers working in parallel are different, then

A. transformers will be overheated

B. power factors of both the transformers will be same

C. parallel operation will be not possible

D. parallel operation will still be possible, but the power factors at which the two transformers operate will be different from the power factor of the common load

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D

4. An ideal transformer will have maximum efficiency at a load such that

A. copper loss = iron loss

B. copper loss < iron loss

C. copper loss > iron loss

D. none of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

5. A Buchholz relay can be installed on

A. auto-transformers

B. air-cooled transformers

C. welding transformers

D. oil cooled transformers

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D

7. **The size of a transformer core will depend on**

A. frequency

B. area of the core

C. flux density of the core material

D. (A) and (B) both

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D

8. A transformer cannot raise or lower the voltage of a D.C. supply because

A. There is no need to change the D.C. voltage

B. A D.C. circuit has more losses

C. Faraday's laws of electromagnetic induction are not valid since the rate of change of flux is zero

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

11. **The no-load current drawn by transformer is usually what per cent of the full-load current?**

A. 0.2 to 0.5 per cent

B. 2 to 5 per cent

C. 12 to 15 per cent

D. 20 to 30 per cent

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option B

16. The value of flux involved m the e.m.f. equation of a transformer is

A. average value

B. r.m.s. value

C. maximum value

D. instantaneous value

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

19. Star/star transformers work satisfactorily when

A. load is unbalanced only

B. load is balanced only

C. on balanced as well as unbalanced loads

D. none of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option B

20. Delta/star transformer works satisfactorily when

A. load is balanced only

B. load is unbalanced only

C. on balanced as well as unbalanced loads

D. none of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

31. The secondary winding of which of the following transformers is always kept closed?

A. Step-up transformer

B. Step-down transformer

C. Potential transformer

D. Current transformer

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D

32. If a transformer is switched on to a voltage more than the rated voltage

A. its power factor will deteriorate

B. its power factor will increase

C. its power factor will remain unaffected

D. its power factor will be zero

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

2. Slip rings are usually made of

A. Copper

B. Carbon

C. Phosphor bronze

D. Aluminium

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

3. The starting torque of a three phase induction motor can be increased by

A. Increasing slip

B. Increasing current

C. Both (A) and (B)

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

5. **The stating torque of the slip ring induction motor can be increased by adding**

A. External inductance to the rotor

B. External resistance to the rotor

C. External capacitance to the rotor

D. Both resistance and inductance to rotor

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option B

7. The term 'cogging' is associated with

A. Three-phase transformers

B. Compound generators

C. D.C. series motors

D. Induction motors

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D

8. In medium sized induction motors, the slip is generally around

A. 0.04 %

B. 0.4 %

C. 4 %

D. 14 %

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

13. In an induction motor the relationship between stator slots and rotor slots is that

A. Stator slots are equal to rotor slots

B. Stator slots are exact multiple of rotor slots

C. Stator slots are not exact multiple of rotor slots

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

5. **Which of the following generators will be preferred if they are required to be run in parallel?**

A. Shunt generators

B. Series generators

C. Compound generators

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

12. According to Fleming's right-hand rule for finding the direction of induced e.m.f., when middle finger points in the direction of induced e.m.f., forefinger will point in the direction of

A. Motion of conductor

B. Lines of force

C. Either of the above

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option B

15. A D.C. generator works on the principle of

A. Lenz's law

B. Ohm's law

C. Faraday's law of electromagnetic induction

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

18. **Which of the following generator will have negligible terminal voltage while running on no-load?**

A. Series generator

B. Shunt generator

C. Compound generator

D. Separately excited generator

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

23. Which generator would you prefer for feeding long D.C. transmission lines?

A. Series generator

B. Shunt generator

C. Over compound generator

D. Flat compound generator

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

24. In D.C. generators, lap winding is used for

A. High voltage, high current

B. Low voltage, high current

C. High voltage, low current

D. Low voltage, low current

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option B

25. Copper brushes in D.C. machine are used

A. Where low voltage and high currents are involved

B. Where high voltage and small currents are involved

C. In both of the above cases

D. In none of the above cases

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

27. For both lap and wave windings, there are as many commutator bars as the number of

A. Slots

B. Armature conductors

C. Winding elements

D. Poles

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option C

30. A shunt generator can self-excite

A. Only if the resistance of the field circuit is less than critical value

B. Only if the resistance of the field circuit is greater than critical value

C. Irrespective of the value of the resistance in the field circuit

D. None of the above

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option A

32. The armature of D.C. generator is laminated to

A. reduce the bulk

B. provide the bulk

C. insulate the core

D. reduce eddy current loss

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D

33. The material for commutator brushes is generally

A. Mica

B. Copper

C. Cast iron

D. Carbon

Answer & Solution | Discuss in Board | Save for Later

Answer & Solution

Answer: Option D