

Chapter-1 (DC generator)

1. The field coils of D.C. generator are usually made of
→ **Copper**
2. A cumulatively Compounded long shunt generator when operating as a motor would be -
→ **Differentially Compounded long shunt.**
3. If brushes of a D.C. generator are moved in order to bring these brushes in magnetic neutral axis, there will be -
→ **Cross-magnetization as well as demagnetizing.**
4. Two D.C. shunt generators, each with armature resistance of 0.02 ohm and field resistance of 50 ohm run in parallel and supply to a total current of 1000 amperes to the load cut. If their e.m.f.s are 270V and 265V, their bus bar voltage will be -
→ **267.5V**
5. Which of the following generators will be preferred if they are required to be run in parallel?
→ **shunt generators.**
6. In a D.C. generator.
→ **External characteristic = Magnetization Characteristic**
ohmic drop armature reaction.
7. The terminal voltage of a series generator is 150V when the load current is 5A. If the load current is increased to 10A, the terminal voltage will be -
→ **Greater than 150V**
8. The e.m.f induced in the armature of a shunt generator is 600V. The armature resistance is 0.1 ohm. If the armature current is 200A, the terminal voltage will be -
→ **580V**
9. Shunt generators are most suited for stable parallel operation because of their →
→ **drooping voltage characteristics.**
10. permeance is the reciprocal of
→ **Reluctance.**
11. The critical resistance of the D.C. generator is the resistance of -
→ **field**

12. In DC generators, the brushes on commutator remain in contact with conductors which -
- Lie under interpolar region.

13. In a DC generator the magnetic neutral axis, when coincides with the geometrical neutral axis, when -
→ There is no load on the generator.

14. → The purpose of providing dummy coils in a generator is - To provide mechanical balance for the rotor.

15. Brushes of D.C. machines are made of -
- Carbon. - carbon

16. Lap winding is composed of -
→ Any even number of conductors.

17. → Wave winding is composed of -
→ That even number which is exact multiple of poles + 2.

18. → The commutator segments are connected to the armature conductors by means of -
→ Copper lugs.

19. Which of the following components of a DC generator plays vital role for providing direct current of a DC generator?
→ Commutator

20. - In lap winding, the number of brushes is always -
→ Same as the number of poles.

21. → Which of the following generating machine will offer -
- Constant voltage on all loads -
→ Level compounded generator.

22. → The number of brushes in a commutator depends on -
→ Amount of current to be collected.

23. → DC generator generally preferred for charging automobile batteries is -

→ Long Shunt Compound generator.

24. → To avoid formation of grooves in the commutator of a DC machine

→ The brushes of opposite polarity should track each other.

- 25 \Rightarrow A Series generator can self-excite -
 \rightarrow Only if the load current is not zero.
- 26 \rightarrow The armature of D.C generator is laminated to.
 \rightarrow reduce eddy current loss.
- 27 \rightarrow The Material for commutator brushes is generally.
 \rightarrow Carbon.
- 28 \rightarrow Armature coil is short circuited by brushes when it lies -
 \rightarrow Along neutral axis.
- 29 \rightarrow Satisfactory Commutation of D.C Machines requires -
 \rightarrow Brushes should be of proper grade and size
 \rightarrow Brushes should smoothly run in the holders
 \rightarrow Smooth concentric commutator properly undercut.
- 30 \rightarrow In a D.C generator the actual flux distribution depends upon -
 \rightarrow Size of air gap
 \rightarrow Shape of the pole shoe
 \rightarrow Clearance between tips of the adjacent pole shoes.
- 31 \rightarrow In a D.C generator the number of mechanical degrees and electrical degrees will be the same when -
 \rightarrow Number of poles is 2
- 31 \rightarrow In the case of lap winding resultant pitch is -
 \rightarrow Difference of front and back pitches
- 32 \rightarrow Following D.C generator will be in a position to build up without any residual magnetism in the poles.
 \rightarrow Self excited generator.
- 33 \rightarrow Armature reaction in a generator results in -
 \rightarrow Demagnetization of leading pole tip and Magnetization of trailing pole tip.
- 34 - Iron losses in a D.C machine are independent of ~~var~~ variations in - Load
- 35 \rightarrow In a shunt generator the voltage build up is generally restricted by - Saturation iron
- 6 \rightarrow The series field of a short-shunt DC generator is excited by - Load current
- 7 \rightarrow D.C series generator is used -
 \rightarrow Voltage at the load end of the feeder.

38 → Fleming's Right-hand rule regarding direction of induced of induced e.m.f, correlates.

→ Magnetic flux, direction of motion and the direction of e.m.f induced.

39 → Compensating windings are used in D.C generators.

→ To neutralize the cross-magnetizing effect of the armature reaction.

40 → Flashing the field of D.C generator means -

→ Creating residual magnetism by a D.C source

41 → A D.C generator can be considered as -

→ rotating amplifier

42 → Lap winding is composed of -

→ Any even number of conductors.

43 → In a D.C generator, Lap winding is used for →

→ Low voltage, high current.

44 → Armature reaction of an unsaturated D.C machine is -

→ cross magnetising.

45 → A D.C winding generator has -

→ ~~Lap winding~~ Lap winding

46 → ~~The armature of DC generator is laminated to~~

~~Reduce eddy current loss.~~

47 → In a commutator - Mica is harder than copper

48 → In a case of D.C machines, Mechanical loss are

are primary function of - Speed

49 → Fleming's Right hand rule is applicable to -

→ DC generator

50 → The yoke of a dc generator is made of cast iron because

→ It is cheaper

→ It gives mechanical protection to the machine

→ It completes the magnetic path.

CHAPTER-2 DC MOTORS

- 1) The Condition for maximum efficiency for a D.C. ~~generator~~ motor is -
→ Variable Losses = Constant Losses.
- 2) If a D.C. Motor is connected across the A.C. supply it will -
→ Burn due to heat produced in the field winding by eddy currents.
- 3) The Speed of a D.C. shunt motor can be increased by -
→ Increasing the resistance in field ~~and~~ circuit.
- 4) The armature voltage control of D.C. motor provides -
→ Constant torque drive.
- 5) Stators are used with D.C. motors because -
→ To restrict armature current as there is no back e.m.f while starting.
- 6) If I_a be the armature current, then Speed of a D.C. Shunt motor is -
→ Independent of I_a .
- 7) In case of D.C. Shunt motors the speed is dependent on back e.m.f only because -
→ Flux is practically constant in D.C. shunt motors.
- 8) A direct on line starter is used for starting motors -
→ upto 5 H.P.
- 9) The ratio of starting torque to full-load torque is least in case of -
→ Shunt motors.
- 10) For starting a D.C. motor a starter is required because -
→ It limits the starting current to a safe value.
- 11) Which of the following method of speed control of D.C. machine will offer minimum efficiency?
→ Armature control method.
- 12) A D.C. series motor is that which -
→ Has its field winding consisting of thick wire and less turns.
- 13) Sparking at the commutator of a D.C. motor may result in -
→ Damage to commutator segments
→ Damage to commutator insulation,
→ Increased power consumption.
- 14) For which of the following applications a D.C. motor is preferred over an A.C. motor?
→ Variable speed operation.
- 15) Which D.C. motor has got maximum self-relieving property?
→ Series motor.

- 16) In a Manual shunt motor starter -
 → Over load relay is connected in series and no volt relay in parallel with the load.
- 17) In Ward-Leonard control the lower limit of speed is imposed by -
 → Residual Magnetism of the generator.
- 18) Which motor should not be started on no-load?
 → Series motor.
- 19) The Speed of a D.C shunt motor is required to be more than full load speed This is possible by -
 → Reducing the field current.
- 20) D.C motor is to drive a load which is almost nil for certain part of the load cycle and peak value for short duration we will select this.
 → Compound motor.
- 21) In a case of conductively compensated D.C series motors, the compensating winding is provided.
 → In series with armature winding.
- 22) If a D.C motor is to be selected for conveyors, which motor would be preferred?
 → Series motor.
- 23) Torque developed by a D.C motor depends upon -
 → Magnetic field
 → Active length of the conductor
 → Current flow through the conductor.
- 24) The starting resistance of a D.C motor is generally -
 → Low.
- 25) D.C motor is to drive a load which has certain minimum value for most of the time and some peak value for short duration. we will select the
 → series motor.
- 26) As the load is increased the speed of D.C shunt motor will -
 → Reduce slightly.
- 27) ~~The total losses in~~ sparking is discouraged in a D.C motor because -
 → commutator gets damaged.
- 28) D.C generators are installed near the load centers to reduce -
 → line losses.

29 → Why are the D.C. motors preferred for traction applications?
→ The speed is inversely proportional to the torque and the torque is proportional to square of armature current.

30 → D.C. generators are installed near the load centers to reduce
→ Line losses

31 → Which of the following load normally needs starting torque more than the rated torque?
→ Conveyors

32 → Which of the following motors is most suitable for signaling devices and many kinds of timers?
→ Reluctance motor.

33 → D.C. shunt motors are used for driving
→ Machine tools

34 → The condition for maximum power in case of D.C. motor is -
→ Back e.m.f = $\frac{1}{2}$ × supply voltage

35 → Which of the following law/rule can be used to determine the direction of rotation of D.C. motor?
→ Fleming

36 → The speed of a D.C. motor can be varied by varying -
→ Field current,
→ Applied voltage, Resistance in series with armature
→ Resistance in series with armature

37 → Following motor is used where high starting torque and wide speed range control is required.
→ D.C. motor

38 → The current drawn by the armature of D.C. motor is directly proportional to -
→ The torque required.

39 → The speed of a D.C. shunt motor more than its full-load speed can be obtained by -
→ Decreasing the field current.

40 → Which D.C. motor will be preferred for machine tools?
→ Shunt motor

41 → The speed of a D.C. series motor is -
→ Inversely proportional to the armature current.

42 → Plugging gives the -
→ Highest torque braking

- 43 → When two D.C. series motors are connected in parallel, the resultant speed is:-
→ More than the normal speed
- 44 → Which of the following motors one will choose to drive the rotary compressor?
→ Synchronous motor.
- 45 → In case the back e.m.f. and the speed of a D.C. motor are doubled, the torque developed by the motor will.
→ Remain unchanged.
- 46 → Which of the following motor is usually used in household refrigerators?
→ Single phase induction motor.
- 47 → Which D.C. motor is preferred for elevators?
→ Cumulative Compound motor.
- 48 → During rheostatic braking of D.C. series motors.
→ Motor is run as a generator.
- 49 → In a D.C. generator all of the following could be the effects of iron losses except.
→ Increase in terminal voltage.
- 50 → If the speed of a D.C. shunt motor is increased, the back e.m.f. of the motor will.
→ Increase
- 51 → In a differentially compounded D.C. motor, if shunt field suddenly opens.
→ The motor will first stop and then run in opposite direction as series motor.
- 52 → Speed control by Ward-Leonard method gives uniform speed variation.
→ In both direction.
- 53 → For which types of D.C. motor, dynamic braking is generally used?
→ Shunt motors
→ Series motors
→ Compound motors.
- 54 → Which D.C. motor will be suitable along with flywheel for intermittent light and heavy loads?
→ Cumulatively compounded motor.
- 55 → The type of D.C. motor used for shears and punches is:-
→ Cumulative compound D.C. motor.

56 → Buses, trains, trolleys, hoists, cranes require high starting torque and therefore, make use of →
→ D.C. series motor.

57 → The purpose of retardation test on D.C. shunt machines is to find out.

→ stray losses

58 → In a D.C. shunt motor, speed is -
→ independent of armature current.

59 → To get the speed of D.C. motor below the normal without wastage of electrical energy is used.
→ Ward Leonard control.

60 → Which of the following loss in a D.C. generator is dissipated in the form of heat.

→ Mechanical loss

→ core loss

→ copper loss

Single Phase Transformer →

- 1 → The reactance of a transformer depends on -
 - leakage flux.
- 2 → Which winding of the transformer has less cross-sectional area -
 - High voltage winding.
- 3 → An ideal transformer is one which has -
 - No losses and magnetic leakage
- 4 → When a given transformer is run at its rated voltage but reduced frequency, its -
 - Core flux density is increased.
- 5 → If the supply frequency to the transformer is increased the iron loss will -
 - Increase.
- 6 → Negative voltage regulation is indicative that the load is -
 - Capacitive only.
- 7 → Iron loss of a transformer can be measured by -
 - Low power factor wattmeter.
- 8 → The size of a transformer core will depend on -
 - frequency and area of the core.
- 9 → Transformer for constant voltage applications is considered good if its voltage regulation is -
 - Low
- 10 → The efficiency of the transformer will be maximum when -
 - Iron losses is equal to the copper losses.
- 11 → The transformer is loaded then the secondary terminal voltage falls for and rises for -
 - Lagging power factor, leading power factor.
- 12 → Efficiency of a transformer is maximum at -
 - unity power factor
- 13 → Copper losses occurs due to ohmic resistance in -
 - Both primary and secondary winding
- ~~14 → Transformer multiple choice questions on~~
- 14 → The transformer ratings are usually expressed -
 - kva
- 15 → Which of the following does not change in an ordinary transformer -
 - frequency

- 16) In a transformer the energy is conveyed from Primary to Secondary.
- by the flux
- 17) A transformer core is laminated to-
- Reduce eddy current losses
- 18) The path of a magnetic flux in a transformer should have-
- Low reluctance.
- 19) No-load on a transformer is carried out to determine-
- Magnetising current and loss.
- 20) No-load current in a transformer-
- lags behind the voltage by about 75°
- 21) A transformer transforms-
- power
- 22) Primary winding in a transformer has more number of turns?
- High voltage winding
- 23) A common method of cooling a power transformer is -
- oil cooling
- 24) The No-load current in a transformer lags behind the applied voltage by an angle of about-
- 75°
- 25) power transformers are designed to have Maximum efficiency at -
- Nearly Full load.
- 26) The maximum efficiency of a distribution transformer is -
- at 50% Full load.
- 27) No-load current of a transformer has -
- has small magnitude and low power factor
- 28) Material used for construction of transformer core is usually -
- Silicon steel.
- 29) In a transformer the resistance between its primary and secondary is -
- infinite
- 30) A transformer oil must be free from -
- moisture
- 31) Which of the following loss in a transformer is zero even at Full load?
- Friction loss

- 31) Transformer core are laminated in order to -
 → Minimize eddy current loss.
- 32) Which of the following losses varies with the load in the transformer?
 → Copper loss.
- 33) The open-circuit test in a transformer is used to measure
 → Core loss
- 34) The all-day efficiency of a transformer depends on -
 → The amount of load
 → The duration of load.
- 35) The all-day efficiency of a transformer is also known as - Energy efficiency.
- 36) The all-day efficiency of a distribution transformer will be high with low -
 → Copper as well as iron losses.
- 37) A single phase transformer is to be switched to the supply to have minimum inrush current. The switch should be closed at.
 → Maximum supply voltage
- 38) The open circuit all-day efficiency of a transformer is -
 → ~~less~~ less than its power efficiency.
- 39) An ideal transformer has infinite primary and secondary inductance.
 → false
- 40) Ideal transformer core has permeability equal to -
 → Infinite.
- 41) The noise of the transformer primarily due to -
 → Magnetostriiction in an iron core
- 42) In a transformer, tappings are usually provided.
 → High voltage side
 → Low voltage side
- 43) For the parallel operation of two single phase transformers it is necessary that they should have -
 → same polarity.
- 44) While connecting two transformers in parallel voltage around the local loop -
 → Equals zero.

45) Why transformers are paralleled?
→ Economical factors, more load capacity, less maintenance.

46) operating transformers in parallel given the advantages of-
→ Reliable loading
→ Increased capacity of power system
→ Reducing the capacity of sub-station.

47) ~~A common~~ Natural oil cooling method have some limitations due to which it is adopted for transformers up to a rating of - 3000 kVA

48) Which of the following mentioned losses occur in a transformer.

→ Hysteresis loss, eddy current losses, Dielectric losses, Stray load losses.

49) The efficiency of a transformer can be calculated accurately from.

→ open cut test, short cut test.

50) During the open cut test of a transformer.

→ primary is supplied rated voltage

Auto-Transformer: →

1. Which of the following is the main advantage of an auto-transformer ~~focuses on~~ over a two-winding transformer?
→ Saving in winding material.
2. Auto-transformer makes effective saving on Copper and Copper losses, when its transformation ratio is -
→ Approximately equal to One.
3. Total windings present in an auto transformer are -
→ 1
4. Autotransformers are particularly economical when -
→ voltage ratio is less than 2.
5. Which of the following is not true regarding the autotransformer compare to two-winding transformer?
→ Higher exciting current.
6. An auto transformer compared to its two-winding counter part has a higher operating efficiency.
→ True.
7. What are the modes in which power can be transferred in an autotransformer?
→ Conduction & Induction.
8. The kVA Rating of an ordinary 2-winding transformer is increased when connected as an auto-transformer is due to -
→ energy is transferred both inductively & Conductively.
9. It is advisable to use auto transformer if the transformation ratio is -
→ Near to 1
10. In an auto transformer if the power transferred inductively is equal to the power conducted through then transformation ratio is given by - 0.5
11 → An auto transformer is a -
→ Variable output voltage transformer
- 12 → For the same excitation voltage and winding currents, the autotransformer gives -
→ More than output of the 2-winding transformer.
13. In a step down auto transformer, if the transformation ratio increases then the saving of Copper -
→ Increases.

14. Whether the given autotransformer is step up or step down its VA rating is always -

→ Greater than the 2 winding transformer.

15. Auto-transformer are _____ in size and _____ in weight.

→ ~~Smaller lighter~~ → Small size & light in weight

16. The output voltages of auto-transformer is equal to the -
- first & second windings.

17. ~~True~~ While comparing potential transformer to an auto transformer, a potential transformer transfers power -
→ Conductively.

18. The statements which support the points that auto transformer are advantageous?

→ Weight of conductor reduces.

→ Ohmic losses reduces.

→ Leakage reactance reduces.

19. The uses of auto-transformers are -

- electrical instruments

- for continuous supply

- Three phase to two phase conversion.

20. Auto-transformer is used to provide _____ to the three-wire lighting systems.

- Neutral

21. The auto-transformer is used for interconnecting in the 132 kV system.

- True.

22. Auto-transformer can be used for starting of _____ motors.

- Induction.

23. The autotransformer biggest problem is _____

→ primary and secondary not isolated electrically

→ Dangerous electric shock

→ Break of L.T side

24. Due to the single winding is used as primary and secondary, the losses are low in auto-transformer.

→ leakage flux & hysteresis.

25. The auto-transformer efficiency is -

- High

26. The symbol of transformation ratio is - k

27. The primary current is equal to the difference of load current and secondary current.

→ Primary

28. The ratio of Auto-transformer is same as conventional 2 windings transformer.

→ Working & Theory

The transformer compares potential transformer to an auto transformer. A potential transformer transformer lower

→ The stations which support the loads that auto transformer are called substations. → Weight of conductor reduces. → Ohmic losses reduces.

→ Leakage reactance reduces. → The size of auto-transformers are

- Electrical instruments - For continuous supply - Three phase to two phase conversion.

→ Auto transformer is used to provide to the

- Neutral - The auto-transformer is used for interconnecting the 33 kV systems.

- True - An auto transformer can be used for starting of

- Induction - The auto transformer is used for starting of induction

→ Primary and secondary are related electrically. → Dangerous electric shock on either side.

"Instrument Transformers"

1. What is the current transformer?
- Transformer used with an A.C. ammeter.
2. What is the potential transformer?
- Transformer used with an A.C. voltmeter.
3. C.T and P.T are used for -
→ Measuring high currents and voltages.
4. The transformer oil should have — volatility and — viscosity.
- Low, Low
5. For given applied voltages, with the increase in frequency of the applied voltage.
→ Eddy current loss will remain unchanged.
6. For a transformer, operating at constant load current, maximum efficiency will occur at -
- unity power factor.
7. part of the transformer which is most subject to damage from overheating is -
- winding insulation.
8. The primary winding of a CT has —
→ A few turns.
9. The Secondary winding of a CT has -
→ A large number of turns.
10. Turns ratio for a CT is -
- $n = N_s / N_p$
11. The primary winding of a P.T has -
→ A larger number of turns.
12. The Secondary winding of a P.T has -
- A few turns.
13. Turns ratio for a P.T is -
 $n = N_p / N_s$.
14. A P.T is a device which is -
- Electromagnetically Coupled.
15. CT and PT are used generally to -
→ Step down the respective quantities.

27. In a constant voltage transformer, the output voltage remains constant due to -
- tapped windings
28. In a potential transformer, the secondary turns are increased slightly and the primary and secondary windings are wound as closely as possible to compensate for -
- Ratio and phase angle error, respectively.
29. In using instrument transformers, care should be taken not to open circuit the.
→ secondary of a current transformer when the primary is carrying the rated current.
30. A current transformer has a phase error of $+8^\circ$ the phase angle between the primary and secondary current is -17°
31. Which one of the following instruments is commonly used to measure the primary current of a transformer connected to mains?
- moving iron meter