D.C. Generator. Chapter - 1

1) The armature of a d.c. machine is made of _____
(i) Silicon steel (ii) wrought iron.
(iii) Cast steel (iv) soft iron.

2) A 4 pole d.c. machine has _____ magnetic circuits.
(i) 2 (ii) 8
(iii) 4 (iv) none of the above.

3) The greatest eddy current loss occurs in the _____ of a d.c. machine.
(i) field poles (ii) yoke.
(iii) commutating pole (iv) armature.

4) The commutator pitch for a simplex Lap winding is equal to.
(i) number of poles of the machine.
(ii) pole pairs.
(iii) 1
(iv) none of the above.

5) In a d.c. machine, the number of commutator segments is equal to.
(i) number of conductors (ii) twice the number of poles.
(iii) number of coils (iv) none of the above.

6) An 4-pole simplex lap winding will have _____ parallel path.
(i) 8 (ii) 4
(iii) 32 (iv) 16

(7) A 6-pole Lap Wound generator has 300 conductors the e.m.f induced per conducter being 5V. The generated voltage of the generator is ____.

(i) 60V. (ii) 1500V.

(iii) 350V. (iv) 250V.

(8) A shunt generator delivers 195A at a terminal p.d. of 250V. The $R_a = 0.02\Omega$, $R_{sh} = 50\Omega$. What is the value of generated emf.?

(i) 246 V. (ii) 270V

(iii) 254V. (iv) 282V.

(9) If W_c is the constant loss and R_a is the armature resistance of a d.c. generator, then load current I_L corresponding to maximum efficiency is

(i) $I_L = \sqrt{\frac{R_a}{W_c}}$ (ii) $I_L = \frac{W_c}{\sqrt{R_a}}$

(iii) $I_L = \frac{R_a}{\sqrt{W_c}}$ (iv) $I_L = \sqrt{\frac{W_c}{R_a}}$

(10) From question number 8 what is the value of copper losses?

(i) 825 W. (ii) 2050W.

(iii) 1025W. (iv) 960W.

(11) A 4 pole, Lap wound d.c shunt generator has an armature winding consisting of 220 turns each of 0.004Ω. The armature resistance is

(i) 0.5Ω (ii) 1Ω

(iii) 0.0255Ω (iv) 0.055Ω.

D.C. Generator. Chapter-II.

Armature Reaction and Commutation.

1) In a d.c. generators armature reaction is produced by
(i) the field current (ii) armature current.
(iii) both field and armature current.
(iv) none of the above.

2) Armature reaction is increased when.
(i) the field current increases.
(ii) the armature current decreases.
(iii) the armature current increases.
(iv) none of the above.

3) When a d.c. generator carries no armature current.
(i) M.N.A coincides with G.N.A.
(ii) M.N.A is behind G.N.A.
(iii) M.N.A is ahead of G.N.A.
(iv) none of the above.

4) In order to have sparkless commutation, the brushes should be placed.
(i) along G.N.A (ii) along M.N.A.
(iii) along G.N.A or M.N.A (iv) none of the above.

5) Flux distibution due to armature reaction causes the M.N.A in a generator to.
(i) remain stationary (ii) move in the dir^n of rotation.
(iii) move opposite to the dir^n of rotation.
(iv) none of the above.

6) In a d.c. generator the effect of armature reaction on the main pole flux is to.

(i) reduce it (ii) distort it.

(iii) both reduce and distort it.

(iv) reverse it.

7) During commutation, the coil undergoing commutation _____ by the brush.

(i) remains short-circuited.

(ii) remains open-circuited.

(iii) either (i) or (ii).

(iv) none of the above

8) The current-time graph for ideal commutation is

(i) a straight line (ii) parabola.

(iii) hyperbola. (iv) none of the above.

9) The commutation period is of the order of.

(i) 1/10 second. (ii) 1/50 second.

(iii) 1/20 second. (iv) 1/500 second.

10) The reactance voltage in a d.c. shunt generator depends upon.

(i) armature current (ii) field current.

(iii) both (i) & (ii) (iv) neither (i) nor (ii)

D.C. Generator. Chapter - 11.

Characteristics.

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1) The field winding of a d.c. shunt machine usually carries _____ of the rated current of the machine.

(i) 2% to 5% (ii) 15% to 20%.

(iii) more than 20% (iv) Less than 0.5%.

2) D.C. machines which are subjected to abrupt changes of load are provided with.

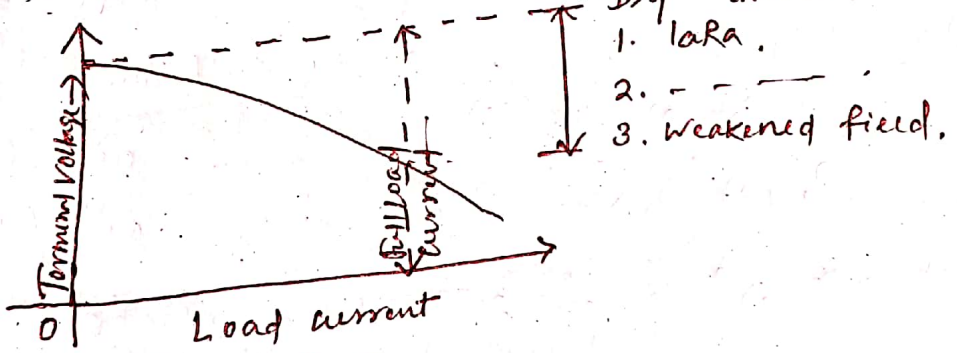
(i) interpole windings (ii) Compensating windings.

(iii) equalizers. (iv) Copper brushes.

3) Fig. 1 shows the external characteristic of _____ generator.

(i) Over-compounded (ii) Series.

(iii) flat-Compounded (iv) Shunt.



→ Fig. 1

4) Referring to Fig 1. the voltage drop at no. 2 is due to _____.

(i) friction (ii) armature reaction.

(iii) field circuit (iv) none of the above

5) The O.C.C. of a d.c. generator is also called its _____ characteristics.

(i) magnetic (ii) internal.

(iii) external (iv) performance.

6) Fig. 2 shows the external characteristics of a _____ generator.

(i) shunt. (ii) flat-compounded.
(iii) Series (iv) over-compounded.

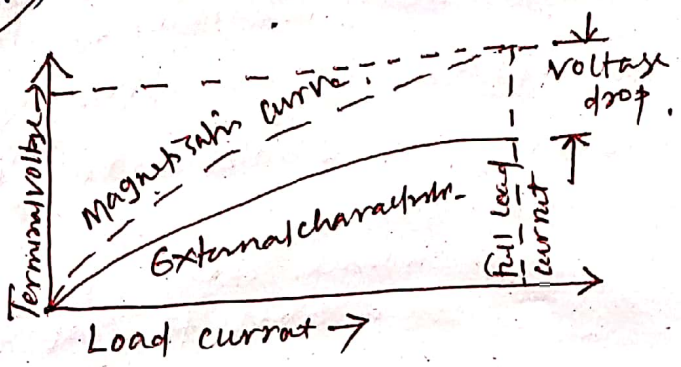
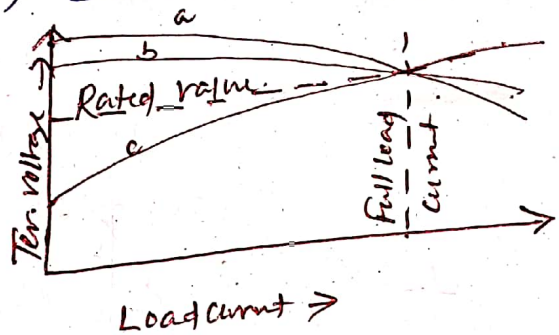


Fig. 2

7) Fig. 3, curve C represents the external characteristics of a _____ generator.

(i) compound. (ii) separately-excited.
(iii) shunt (iv) none of the above.



8) The line representing the critical resistance of a d.c. generator _____ its O.C.C.

(i) intersects (ii) runs parallel to.
(iii) just touches (iv) none of the above.

9) Which of the following generator provides approximately const. voltage from no-load to full-load.

(i) Series (ii) shunt.
(iii) flat compounded (iv) over-compounded.

10) A shunt generator gives its greatest voltage at

(i) no-load. (ii) full-load.
(iii) half full-load (iv) none of the above.

1-φ TRANSFORMER

1) A transformer will work on _____

a) a.c. only b) d.c. only.

c) a.c as well as d.c. d) none of the above.

2) The primary and secondary of a transformer are coupled ___

a) electrically. b) Magnetically.

c) both (a) & (b) d) none of the above.

3) A transformer transfers electrical energy from primary to secondary usually with change of _____.

a) frequency b) power.

c) voltage d) time period.

4) Calculate the core-area required for a 1600 KVA, 6600/440V, 50Hz, single phase core-type power transformer. Assume a maximum flux density of 1.2 Wb/m2 and induced voltage per turn of 30V.

a) 975 cm^2 b) 1100 cm^2

c) 1125 cm^2 d) 1224 cm^2.

5) The no-load input power to a transformer is practically equal to _____ loss in the transformer.

a) iron b) copper.

c) eddy current d) none of the above.

6) The voltage transformation ratio is given by _____

a) N_1/N_2 b) E_1/E_2

c) N_2/N_1 d) I_2/I_1

7) In equivalent ckt of a transformer on no-load. The element R_0 accounts for _____.

a) Core loss b) Copper loss.

c) Magnetic leakage loss d) none of the above.

D.C. motor Chapter-2

4) By putting controller resistance in series with the armature of a d.c. motor, we can obtain speed.
(a) above the normal speed only.
(b) below the normal speed only.
(c) above as well as below the normal speed.
(d) none of the above

5) The difference between no-load and full-load speed of a d.c shunt motor is of the order of.
a) 25% b) 1 %
c) 10% d) 50%

Chapter-3, Testing of D.C. ~~motor~~ machines

1) The efficiency of a large d.c. machine is not determined by direct loading becaus.
a) it is difficult to provide means for operating a large machine under load.
b) it is an expensive method.
c) it requires the application of load.
d) all the above.

2) In a d.c. machine, windage loss is proportional to.
a) speed b) cube of speed.
c) square of speed d) none of the abov.

3) A d.c. machine has maximum efficiency near ____
a) half full load b) full-load.
c) twice the full load d) No-load.

D.C. MOTOR Chapter-1

1) The back e.m.f in a d.c motor. _____

(i) opposes the applied voltage.
(ii) aids the applied voltage
(iii) aids the armature current.
(iv) none of the above

2) The value of back e.m.f (E_b) in d.c. motor is maximum at _____

(i) full load (ii) no-Load.
(iii) half full load (iv) none of above.

3) A 440V d.c. shunt motor has an armature resistance of 0.8Ω and a field resistance of 200Ω. Find the back e.m.f when giving an output of 7.46 KW at 85% efficiency.

(i) 222.4V (ii) 425.8 V.
(iii) 312.6 V (iv) 392.7 V.

4) A 250V d.c. shunt motor takes a total current of 20A. Resistance of shunt field winding is 200Ω and that of armature is 0.3Ω. What is the current in the armature.

(i) 9.65 A (ii) 11.25 A.
(iii) 18.75 A (iv) 16.62 A.

5) A 220V d.c. shunt motor takes a total current of 80A and runs at 800 r.p.m. Resistance of shunt field is 50Ω. and that of armature is 0.1Ω. The iron and friction lones amount to 1600 W. What is the driving power of the motor.

(i) 16050 W (ii) 14500 W.
(iii) 12600 W. (iv) 18500 W.

6) D.C. motor converts _____ into _____.

(i) mechanical energy ; electrical energy
(ii) Chemical energy ; electrical energy
(iii) solar energy ; chemical energy.
(iv) Electrical energy ; Mechanical energy.

7) The shaft torque (T_{sh}) in a d.c. motor is less than total armature torque (T_a) because of _____ in the motor.

(i) cu losses (ii) field losses.

(iii) iron and friction losses (iv) none of the above.

8) Which motor has the best speed regulation.

(i) Series. (ii) Cumulatively - Compounded.

(iii) Shunt (iv) Differentially - Compounded.

9) When a d.c. series motor will overspeed.

(i) the load is increased.

(ii) the field is opened.

(iii) the armature ckt is opened.

(iv) Load is removed.

10) For the same rating, which motor has the least starting torque.

(i) Compound (ii) Series.

(iii) Shunt (iv) None of the above

Chapter - 2, Speed control of D.C. motors.

1) A d.c. motor runs at 1725 r.p.m. at full-load and 1775 rpm at no-load. The speed regulation is.

(i) 4.7% (ii) 2.9%

(iii) 3.6% (iv) 1.5%

2) The speed of a d.c. motor can be controlled by changing.

(i) flux (ii) armature ckt resistance.

(iii) applied voltage (iv) all of the above.

3) We can control speed by flux control method of speed control of a d.c. shunt motor.

(i) above the normal speed only.

(ii) below the normal speed only.

(iii) above as well as below the normal speed.

(iv) none of the above.