1. A DC motor converts_____energy to_____energy.

   (a) electrical, mechanical

   (b) electrical, electrical

   (c) chemical, electrical

   (d) mechanical, electrical

2. To determine the forces acting on a current carrying conductor within a magnetic field, you would use:

   (a) Flemming’s right hand

   (b) Lenz's law

   (c) right hand conductor rule

   (d) Flemming’s left hand rule

3. The torque produced in a DC motor is _____ to the armature current and_____to the main field flux.

   (a) Inversely Proportional, proportional

   (b) Proportional, proportional

   (c) Inversely Proportional, Inversely proportional

   (d) Proportional, Inversely proportional

4. An increase in the load applied to a DC motor will cause the motor speed to _____ and the motor torque to_____.

   (a) Increase, increase

   (b) Decrease, decrease

   (c) decrease, increase

   (d) Increase, decrease

5. Whilst driving a load, a_____is generated in the armature conductors which _____ the applied motor voltage.

   (a) Counter emf, opposes

   (b) Counter emf, increases

   (c) Mutual emf, opposes

   (d) Mutual emf, increases

6. A 150mm long conductor carries a current of 40A at right angles to a magnetic field with a flux density of 0.5T. Determine the force acting on the conductor. (3N)

7. Determine the increase in flux density required in question 1 to increase the force acting on the conductor to 7N. (0.667T)

8. An armature has a radius of 125mm, and an effective conductor length of 150mm under the field pole. If the main flux is 0.4T and the armature current is 100A, determine

   (a) the force acting on the conductor; (6N) and

   (b) the torque developed on the conductor under the field poles. (0.75Nm)

9. An armature with a radius of 125mm is wound with 4 coils each of 100 turns. If the effective length of one half of a loop under the field poles is 200mm, the current in the conductors is 250A and the flux is 0.2T, determine the torque developed within the armature. (1000Nm)

10. A DC motor has a machine constant of 20, a main flux of 0.015Wb and runs at 750rpm. Determine the emf generated within the armature conductors. (225V)

11. If the motor in question 18 is connected to a 250V supply and has an armature circuit resistance of 0.15Ω, determine the amount of current flowing in the armature (167A)

12. The motor shown in figure 12 has a field flux of 0.0125Wb, runs at 250rpm, and hasa machine constant of 8. For these conditions, determine the:

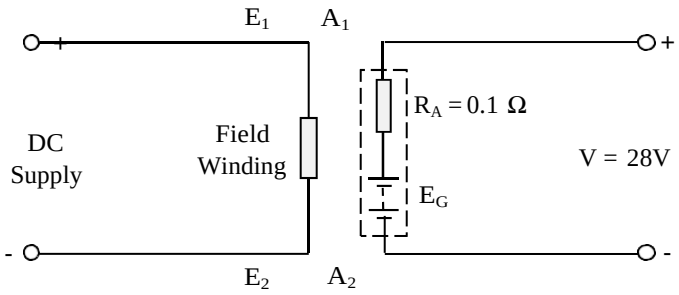

Figure 12.

(a) Back emf; (25V)

(b) Armature current; (30A)

(c) developed torque; (3Nm)

(d) armature circuit voltage drop. (3V)

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