Name:		Roll No.		Subject	Physics
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Q. No. 1 Tick the best option **22**

1. A device which converts mechanical energy into electrical energy is called:
   (a) Generator (b) Motor (c) Converter (d) Oscillator
2. Emf produced by A.C generator depends upon:
   (a) Magnetic field strength (b) Number of turns in the coil
   (c) Frequency of rotation (d) All of these
3. The principle of electric generator is based on:
   (a) Faradays law (b) Lenz's law (c) Ampere's law (d) None of above
4. The only difference between construction of D.C generator and A.C generator is that of:
   (a) Coil (b) Carbon brushes (c) Magnetic field (d) Commutator
5. The Alternating generator use:
   (a) Coiled rings (b) Split rings (c) Slip rings (d) Loop rings
6. The generator running in reverse direction may be called as:
   (a) D.C generator (b) Motor (c) Commutator (d) A.C generator
7. In a step-up transformer, voltage in the secondary increases and current:
   (a) Decreases (b) Increases (c) Remains same (d) None of these
8. When motor is just started, back emf is almost:
   (a) Maximum (b) Minimum (c) Zero (d) Infinite
9. If the back emf in a motor decrease, then it will draw:
   (a) Zero current (b) More current (c) Steady current (d) Small current
10. The core of the transformer laminated to reduce:
    (a) Magnetic loss (b) Hysteresis loss (c) Eddy current loss (d) Electric loss
11. In A.C generator, when plane of the coil perpendicular to the magnetic field, then output of generator is:
    (a) $N\omega AB$ (b) $2\pi f$ (c) Maximum (d) Zero
12. A step-down transformer:
    (a) Decreases current (b) Increases current (c) Current remains constant (d) Current becomes infinite
13. One of the source of A.C voltage is:
    (a) Motor (b) Battery (c) Solar cell (d) UPS
14. If the angular frequency of A.C generator increased to double, the time period would become:
    (a) Double (b) Four times (c) One-fourth (d) Half
15. Turn ratio of a transformer is 50. If 220V A.C is applied to its primary coil, voltage in secondary coil will be
    (a) 220 V (b) 440 V (c) 4.4 V (d) 11000 V
16. The jerk in D.C motor are created by use of:
    (a) Armature (b) Slip ring (c) Commutator (d) Source of emf
17. If Ns < Np then such a transformer is called:
    (a) Step-up (b) Step-down (c) Single phase (d) Both A & B
18. Who invented commutator?
    (a) William smith (b) Michael faraday (c) Oersted (d) William sturgeon
19. The amount of torque in D.C. motors depends upon:
    (a) Current (b) Resistance (c) Electric field (d) Force
20. The best material for the core of a transformer is:
    (a) Stainless steel (b) Mild steel (c) Hard steel (d) Soft iron
21. Which of the following quantity decreases in a step-up transformer?
    (a) Current (b) Voltage (c) Frequency (d) None
22. Devices in the circuit that consume electric energy are called:
    (a) Dissipaters (b) Generators (c) Motors (d) Loads

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Q. No. 2 Write the short answer of these following question **8 x 2 = 16**

1) What is back emf effect in D.C motor?
2) How power losses can be minimized in a transformer?
3) Four unmarked wires emerge from a transformer. What steps would you take to determine the turn's ratio?
4) A suspended magnet is oscillating freely in a horizontal plane? The oscillations are strongly damped when a metal plate is placed under the magnet. Explain why this occurs.
5) Can an electric motor be used to drive an electric generator with the output from the generator being used to operate the motor?
6) Can a D.C motor be turned into a D.C generator? What changes are required to be done?
7) Show that ε & $\Delta\Phi/\Delta t$ have same units?
8) When an electric motor, such as an electric drill, is being used, does it also act as a generator? If so, what is the consequence of this?

Q. No. 3 Long question

A. What is A.C generator? Describe its principle, construction and working. Derive and expression for induced emf and induced current.

B. An ideal step-down transformer is connected to main supply of 240V. It is desired to operate a 12 V, 30 W lamps. Find the current in the primary and the transformation ratio?

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