

SSLC MODEL EXAMINATION, FEBRUARY - 2025

PHYSICS

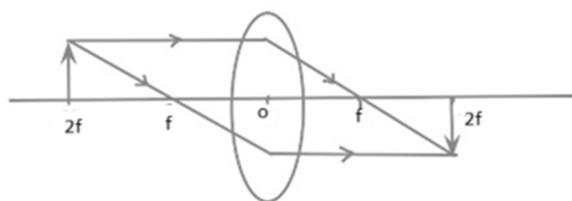
Answers

SECTION-A (1 Mark each)

1. 50 Hz
2. Scattering
3. Number of images = 7
4. Moving coil loudspeaker
5. (a) Correct graph

SECTION-B (2 Marks each)

6. Convex mirror is used as a rear-view mirror in vehicles because it provides a wider field of view and always forms a virtual, erect, and diminished image.
7. Given: $P_1 = 100 \text{ W}$, $V_1 = 230 \text{ V}$, $R = 529\Omega$.
Now, $V_2 = 115\text{V}$, $P_2 = (115^2) / 529 = 25 \text{ W}$.
- 8.



9. (a) Defect - Hypermetropia (Long sightedness).
(b) Corrective lens - Convex lens.
10. **Green energy:** Windmill, Solar cell.
Brown energy: Atomic reactor, Thermal power station.

SECTION-C (3 Marks each)

11. (a) Number of turns in secondary coil, $N_s = (10 \times 4600) / 230 = 200$ turns.
(b) Thick wire is used in the secondary coil.
12. **Matching Columns:**
 - Heating coil - Nichrome - Electric heater
 - Filament - Tungsten - Incandescent lamp
 - Fuse wire - Alloy of tin and lead - Safety fuse
13. (a) Optical phenomenon: Total Internal Reflection.
(b) No, because the critical angle of water is 48.6° . Here, the angle of incidence is 45° , which is less than the critical angle. So, total internal reflection does not occur.

14. Given: $h_o = 4 \text{ cm}$, $u = -30 \text{ cm}$, $v = -15 \text{ cm}$.
(a) Using the mirror formula: $f = -10 \text{ cm}$.
(b) Magnification, $m = -0.5$.
15. (a) Main constituent of LPG: Butane.
(b) "D25" on the cylinder indicates its expiry date (valid until December 2025).
(c) Precautions:
- Regularly check for gas leaks.
 - Store the cylinder upright and away from flammable materials.

SECTION-D (4 Marks each)

16. Given: $R_1 = 6\Omega$, $R_2 = 3\Omega$, $V = 6V$, $t = 180s$.
(a) Effective resistance: $R = 2\Omega$.
(b) Ammeter reading: $I = 3A$.
(c) Heat generated: $H = 2160 \text{ J}$.
17. (a) Device: DC Motor. It converts electrical energy into mechanical energy.
(b) A - Armature coil, B - Split ring commutator.
(c) Rule: Fleming's Left Hand Rule.
(d) Function of B: Changes the direction of current every half-rotation.
18. (a) Speed of light order: Glass < Kerosene < Water < Air.
(b) Light bends towards the normal when moving from water to kerosene due to lower speed in kerosene.
(c) Speed of light in glass = $2 \times 10^8 \text{ m/s}$.
19. (a) P - Red, Q - Violet.
(b) Different colors have different wavelengths, causing varied deviation.
(c) Red is used in vehicle tail lamps as it scatters the least, allowing visibility over long distances.
20. (a) Transmission loss: Loss of electrical energy as heat and radiation during transmission.
(b) Steps to minimize loss:
- Decrease current.
 - Increase conductor thickness.
 - Increase voltage to 220 kV to minimize current and heat loss.
- (c) First device in household connection: Energy meter (measures power consumption).
(d) **Difference between MCB and fuse:**
- MCB works on both thermal & magnetic effects, can be reused, and is used in low voltage circuits.
 - Fuse works on thermal effect, is not reusable, and is used in both low & high voltage circuits.