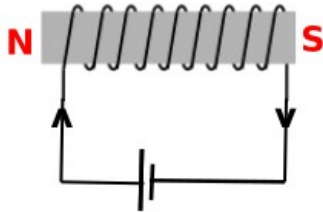
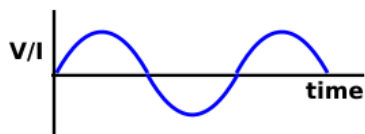


## SSLC EXAMINATION :2025

1. Optic centre
2.  $90^\circ$
3. b. Electrical energy is converted into sound energy based on the motor principle.
4. Plane mirror
5. Direction of current
6. a. When voltage is applied between the electrodes, the gas atoms inside the tube become excited. As they return to a lower energy state, they emit light.  
b. i. No energy loss. ii. Eco -friendly ( doesn't cause pollution)
7. a. It is the loss of energy in the form of heat while power is being transmitted through a transmission line due to joule heating effect.  
b. Transmit power at high voltage
8. a. Due to total internal reflection.  
b. Reduce the angle of incidence to less than  $48.6^\circ$  / Incident light at an angle of incidence less than the critical angle
9. a. They are inversely proportional.  
b.  $f = 1/-D = 1/-0.5 = -2 \text{ m}$
10. One of the best solutions to reduce the energy crisis is the maximum utilization of renewable energy sources. Solar energy is renewable and does not cause pollution.
11. a. high resistivity, high melting point, ability to remain hot red for long time, No vapourisation  
b. Heat,  $H = V^2t/R = 230 \times 230 \times 30 \times 60 / 690 = 138000 \text{ J}$
12. a. mutual induction  
b. Brightness of the bulb decreases.  
Due to back emf induced in the inductor.
13. a.  
b. The end where the current flows clockwise is the south pole, and the end where it flows anticlockwise is the north pole.  

14. a. Figure. b. Because image is formed behind the retina.  
b. Use a convex lens of suitable power.
15. a. 1. Fuel wastage 2. Severe pollution.  
b. 1. Ensure sufficient oxygen is available.  
2. Provide an exhaust system for the escape of combustion gases.  
3. Ensure solid fuels are dry. 4. Attain the ignition temperature.

16. a. No. The voltage at  $65 \Omega$  is less than  $230 \text{ V}$ , because the applied voltage is split among the resistors.  
 b. Resultant resistance of parallel combination  $R = 50 \Omega$   
 Effective resistance of the circuit =  $R_1 + R = 65 + 50 = 115 \Omega$   
 c. Effective resistance increases. Because parallel combination of resistors reduces effective resistance.

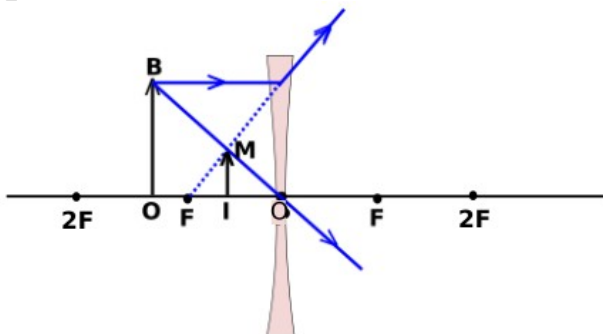
17. a. X: slip ring    Y: Brush  
 b. AC



c. Fleming's Right Hand Rule: Stretch forefinger, middle finger and thumb of the right hand in mutually perpendicular directions. If the forefinger represents the direction of magnetic field and the thumb represents the direction of motion of the conductor, then the middle finger represents the direction of induced current.

18. a.  $h_o = +15 \text{ mm}$   
 Object distance,  $u = -40 \text{ mm}$   
 b. magnification,  $m = h_i/h_o = 75/15 = +5$   
 c. We have  $m = -v/u$   
 $5 = -v/-40$       Or  $v = 200 \text{ mm}$   
 $f = uv/u+v = -40 \times 200 / (-40+200) = -50 \text{ mm}$

19. a.  
 b. A concave lens always forms a virtual image because it diverges incoming parallel light rays.  
 c. Erect, diminished and virtual



20. a. Wave length of the light and size of the particles  
 b. At evening, light has to travel a greater distance through atmosphere to reach the observer. During this long journey, colours having smaller wavelengths like violet, indigo, blue etc. would be lost due to successive scattering. The predominant colours remain in the light are red and orange. So the sun and the sky appear in red colour during sunset.  
 c. Because there is no atmosphere, there is no scattering.