

# SSLC EXAM MARCH 2021

SSLC PHYSICS | ARUN.S.NAIR  
DRG IN PHYSICS

## ANSWER KEY

Physics English  
medium.  
Total 34  
questions  
Maximum mark  
40  
Time 90 minutes

**Q CODE :**  
**S1615**

Kindly send  
me in the  
following  
number if you  
have noticed  
any mistake.  
9747113838.

## QUESTIONS 1 TO 8

1. Red
2. Graphite bush
3. Persistence of Vision
4. -20 cm
5. Liquefied natural gas
6. LPG
7. Total Internal Reflection
8. Beyond 2f

## QUESTIONS 9 TO 20

10. a. heating coil b. Nichrome
11. OVERLOADING of an electric circuit means when current flows in a circuit it becomes more than the capacity of components in the circuit to resist the current. When too much current passes an electric overload occurs through electric wires.  
Short Circuit -A short circuit is simply a low resistance connection between the two conductors supplying electrical power to any circuit. This results in excessive current flow
12. Increase the intensity of the electric current. Increase the no of turns in the solenoid.
13. a. A- Voice Coil B- Field Magnet  
b. A diaphragm is the thin, semi-rigid membrane attached to the voice coil, which moves in a magnetic gap, vibrating the diaphragm, and producing sound
14. Raise the temperature of the body by massaging.  
Give artificial respiration if needed.
15. a. Whenever there is a change in the magnetic flux linked with a coil, an emf is induced in the coil. This phenomenon is electromagnetic induction.

b. It can be defined as the generation of a potential difference in a coil due to the changes in the magnetic flux through it.

16. a. Angle of incidence,  $i = 90^\circ - 40^\circ = 50^\circ$

b. Angle of incidence and angle of reflection are equal ie  $i = r$

17. a. Distance of object,  $u = -30\text{cm}$

Distance of image,  $v = -15\text{cm}$

b. Focal length of the mirror  $f = UV/U+V$   
 $= 450/ -45 = -10\text{ cm}$

18. Medium A The angle of incidence is greater than that of angle of refraction, so medium A has low optical density. As optical density decreases speed of light through the medium increases.

19. (a) North pole (b) Maxwells right hand thumb rule

20. Green energy is any energy type that is generated from natural resources, such as sunlight, wind or water. It often comes from renewable energy sources although there are some differences between renewable and green energy, which we will explore, below.

The key with these energy resources are that they don't harm the environment through factors such as releasing greenhouse gases into the atmosphere

## QUESTIONS 21 TO 28

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21. a.  $Q=It = 2 \times 300 = 600\text{C}$  b.  $R= V/I = 230/2 = 115\ \Omega$  c. Power  $P= IV = 2 \times 230 = 460\text{W}$

22. a. Resistors are connected in series, Effective  $R = 4+6+12 = 22\ \Omega$

b. Lowest resistance can be obtained by connecting the resistances in parallel

$R= R_1R_2/ R_1+R_2 = (6 \times 12)/(6+12) = 72/18 = 4\ \Omega$

23. a. Step up transformer (POWER TRANSFORMER)

b. Step down transformer (DISTRIBUTION TRANSFORMER)

c. The number of turns in primary coil is less than that of secondary in step-up transformer. Also the thickness of the primary coil is greater than that of secondary

24. a. A – AC generator, B – battery, C – DC generator

b. A: emf in the circuit is varying because the direction changes continuously,



B: direction is same, emf is constant

25. a. Fossil fuels are formed by the transformation of plants and animals that went under the earth's crust millions of years ago. The transformation took place in the absence of air under high pressure and high temperature.  
b. Coal tar ,coal gas ,coke, ammonia

26. a. Dispersion is the phenomenon of splitting up of a composite light into its constituent colours.  
b. Sunlight passes through the water droplets in the atmosphere ,in water droplet light undergo one dispersion one total internal reflection and one refraction

27. a. When a ray of light passes from a medium of greater optical density to that of lower optical density, the angle of incidence at which the angle of refraction becomes  $90^\circ$  is the critical angle  
b. When a ray of light passes from a medium of higher optical density to a medium of lower optical density at an angle of incidence greater than the critical angle, the ray is reflected back to the same medium without undergoing refraction. This phenomenon is known as total internal reflection.

28. a. If magnification is negative, it means image formed by the mirror is real and inverted.  
b. Magnification is defined as the ratio of the height of image to height of object  
Magnification,  $m = \text{height of image} / \text{height of object} = h_i / h_o = -v / u$   
c. Concave mirror

## QUESTIONS 29 TO 34

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29. a. DC Generator  
b. Electromagnetic induction  
c. AC  
d. Split rings are used to keep the direction of current be same in the external circuit

30. a. Figure B  
b. The bulbs in both the circuits will glow  
c. Since the circuit B is AC, a back emf is induced in it due to self- induction, the resultant voltage across the bulb decreases and brightness of the bulb decreases.

31. a. Same Side of the object      ii. Magnifying glass  
b. Position of object at infinity ---image : inverted ,real and diminished  
Position of object between F and 2F ---image : inverted ,real and enlarged



32. a. effective resistance =  $R_1 + R_2 = 100 + 15 = 115 \Omega$

b. Current,  $I = V/R = 230/115 = 2A$

c Heat,  $H = I^2 Rt$ ,

$= 4 \times 100 \times 600 = 240000J$

33. a. Safety fuse is a device which protects us and the appliances from danger. When the current that flows into the circuit exceeds the permissible limit, the heat generated becomes excessive.

b. Fuse wire is an alloy of tin and lead and it has low melting point.

c. The ends of the fuse wire must be connected with the screws in the plug. The fuse wire should not project out of the carrier base.

34.

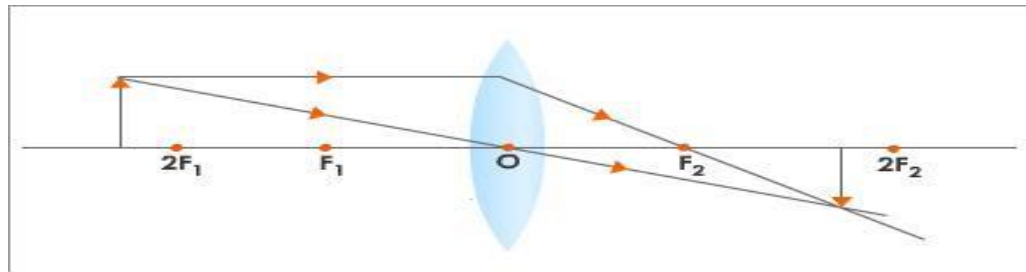


Image is inverted ,real and diminished

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