DIET KANNUR
MUKULAM SSLC MODEL EXAMINATION 2022
PHYSICS

Time: 1½ Hours **Total Score: 40**

GENERAL INSRTUCTIONS:

- **The first 15 minutes is the cool off time.**
- **You may use the time to read and plan your answers.**
- **Write answers that you can write with confidence first.**
- **The question number and the sub-question number should be clearly written.**

PART-I

A. Answer any four questions from 1 to 6. Each carries 1 score. (4 x 1 = 4)

1. Which is the correct equation to find power of an electric device ?
   ($P = \frac{V^2}{R}$, $P = \frac{R}{V^2}$, $P = V^2R$, $P = R^2V$)
2. Identify relation between the first pair and complete the second pair.
   LPG : Butane ; CNG : .....
3. Among the following which is a non renewable energy source?
   (Biogas, Biomass, Coal, Solar energy)
4. Identify the statement related to a step-down transformer.
   a) Thick wire is used in the primary.
   b) Current in the primary is greater.
   c) Voltage in the secondary is greater.
   d) Current in the secondary is greater.
5. A current carrying conductor kept in a magnetic field experience a force.This principle is known as .....
6. Magnification of a spherical mirror is found to be + 0.5. Identify the type of mirror ?

B. Answer all questions from 7 to 9. Each carries 1 score. (3 x 1 = 3)

7. Which device is used to measure household electrical energy ?
   (voltmeter, watt hour meter, galvanometer, ammeter)
8. How many images are formed when two plane mirrors are arranged at an angle of 90^0
   (1 , 2 , 3 , 4))
9. Name any two devices that works using solar energy.

PART-II

A. Answer the following question. Carries 2 scores. (1 x 2 = 2)

10. One of the reason behind excess current flow in an electrical circuit is over loading.
    a. Write another reason for excess current in circuits.
    b. If the current in an electric circuit is increased to two times how much times will the heat increases ?

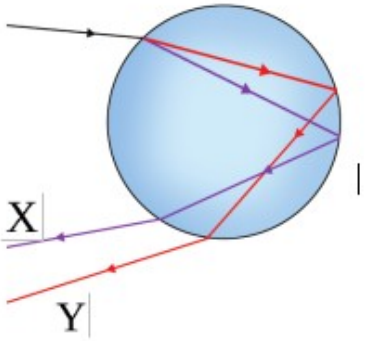
B. Answer any one question from 11 to 12. Each carries 2 scores. (1 x 2 = 2)

11. Compare the magnetic properties of a current carrying solenoid and a bar magnet.
12. What do you mean by calorific value of a fuel? In which unit it is expressed?

PART-III

A. Answer any three questions from 13 to 16. Each carries 3 scores. (3 x 3 = 9)

13.Dispersion of sunlight caused by the water droplets during the formation of a rainbow is depicted.

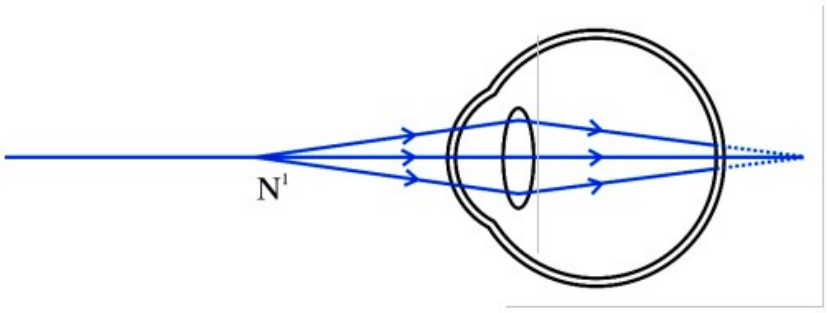


a) Name the colours represented as X and Y in the figure ?
b) Where will be the Sun when the rainbow is seen in the East ?
c) Why dispersion occur when sunlight passes through the droplets of water ?

14.Explain the following terms related to a lens?
a) optic centre
b) centre of curvature
c) principal axis

15. The critical angle of glass is 42º.
a) What is critical angle ?
b) Name the phenomenon which occurs when the angle of incidence is greater than the critical angle.
c) Write two practical applications of this phenomenon in our day to day life.

16.The figure shows the image formation in the eyes of a person with defective eye.



a) Name the defect of this eye ?
b) Give two reasons for this defect ?
c) How this defect can be rectified?

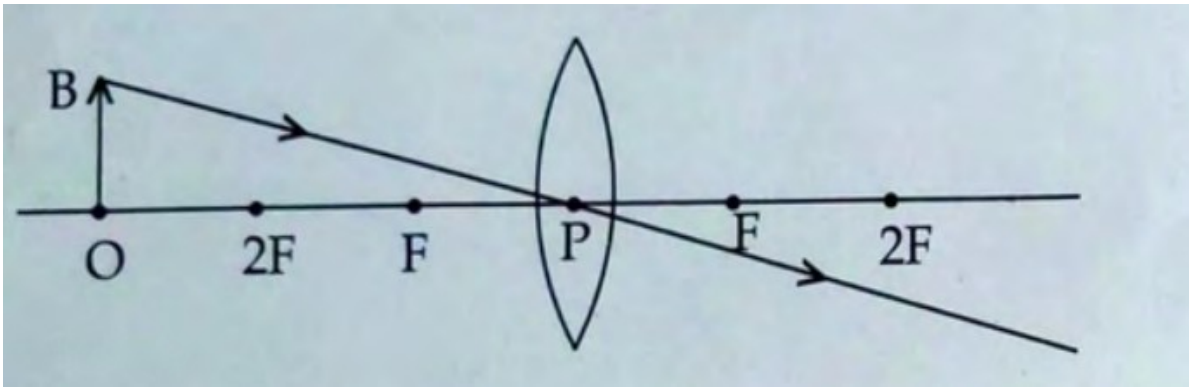
B. Answer the following question. Carries 3 scores. (1 x 3 = 3)

17. Tungsten is used as the filament in incandescent lamps.
a)Write two reasons for using tungsten as the filament?
b)Why the bulb of an incandescent lamp is filled with an inert gas?
c) The use of incandescent lamps is to be restricted. Why?

PART IV

A. Answer any two questions from 18 to 20. Each carries 4 scores. (2 x 4 = 8)

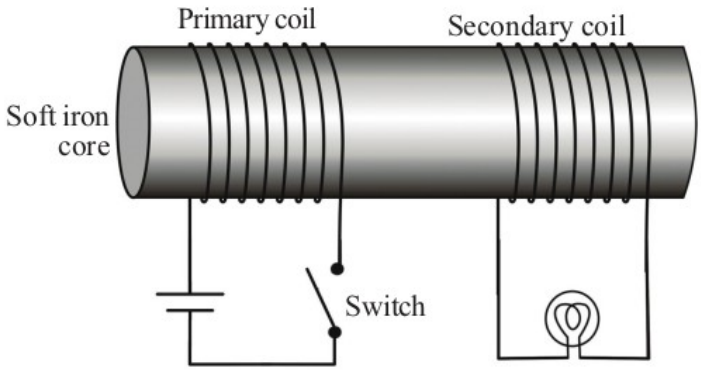
18.Observe the ray diagram given below.



a) Complete the ray diagram and find the position of the image.
b) Write two features of the image.

19. The focal length of a concave mirror is 12 cm.An object of height 2 cm is placed at a distance of 20 cm away from this mirror. Calculate the following.
   a) The distance to image from the mirror.
   b) Magnification
   c) Height of the image

20.In the figure given below the bulb connected in the secondary glows only when the switch in the primary is turn on and off.

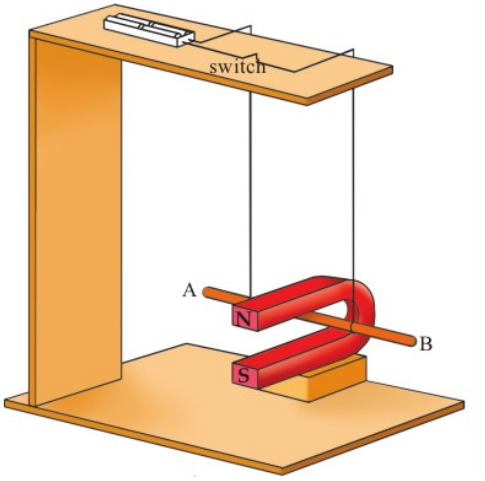


a) What change is to be made in the primary circuit if the bulb in the secondary is to glow continuously ?
b) Why the bulb in the secondary glows continuously when such a change is made in the primary?
c) Write the name of a device that works using this principle ?

B. Answer any one question from 21 to 22. Each carries 4 scores. (1 x 4 = 4)

21.A healthy eye can form the image of objects from far point upto near point on the retina.
   a) What is meant by near point?
   b) By which name the ability of the eye to form an image on the retina by adjusting the focal length of the lens in the eye is known?
   c) Explain how the focal length of the lens in the eye changes when we look at nearer and far objects?

22.Observe the figure given below.



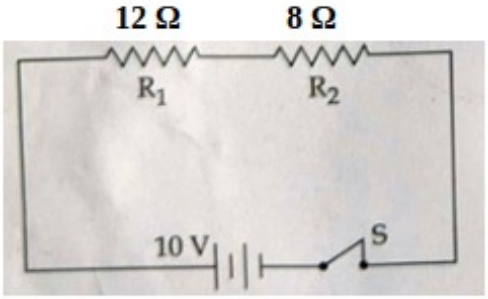
a)If an electric current passes from A to B through the conductor AB, then in which direction the conductor will move? (Inwards the magnet, Outwards the magnet)
b) Name the rule helps to find the direction of motion of the conductor?
c) Write two methods to reverse the direction of motion of the conductor?

PART V

A. Answer any one question from 23 to 24. Each carries 5 scores. (1 x 5 = 5)

23.The working principle of a generator and a moving coil microphones are the same.
a)Write the working principle of these devices ?
b)What change must be done in the structure of an AC generator to convert it into a DC generator?
c)Draw the graph of the output emf from a DC generator?
d)Explain how sound energy is converted into electrical signals in a moving coil microphone.

24. Observe the circuit diagram and answer the following questions.



a)Write down the way of connecting resistors in the circuit.
b)Find out the effective resistance of the circuit?
c)Calculate the current through the circuit.
d)Calculate the heat produced in the 8 Ω resistor if current flows for 5 minutes.