



# PHYSICS

## BOOKS - SELINA PHYSICS (ENGLISH)

### SELF ASSESSMENT PAPER -5

#### Section A

1. If the power of a motor be 100 kW, at what speed can it raise a load of 50,000 N ?



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2. A body is thrown vertically upwards. Its velocity keeps on decreasing. What happens to its kinetic energy as its velocity becomes zero ?



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3. A basket kept under a running tap is getting filled with water . A person sitting at a distance is able to get an idea when the

bucket is about to be filled .

(I ) what change takes place in the sound to give this idea ?

(ii) what causes the change in the sound ?



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4. Name the unit used for measuring the sound level.



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5. A monochromatic beam of light of wavelength  $\lambda$  passes from air into the glass block , write an expression to show the relation between the speed of light in air and the speed of light in glass .



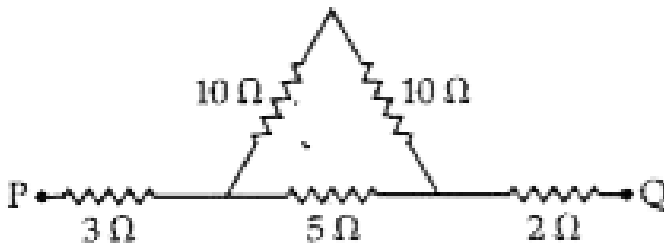
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6. As the ray of light passes from air to glass , state how the wavelength of light changes

does it increase , decrease or remain constant  
?

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7. Calculate the equivalent resistance between P and Q from the following diagram



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8. Explain the motion of a planet around the sun in a circular path?



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9. It is observed that the temperature of the surroundings starts falling when the ice in a frozen lake starts melting. Give a reason for the observation.



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**10.** You are provided with a printed piece of paper. Using this paper how will you differentiate between a convex lens and a concave lens ?



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**11.** Why is radioactivity considered to be a nuclear phenomenon?



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12. A scissor is a \_\_ multiplier.



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13. Name the type of single pulley that has a mechanical advantage greater than one?



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14. State the S.I. unit of specific heat capacity and heat capacity. (







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15. (I) How does the refractive index of a medium depends on the wavelength of light used?

(II) Which is greater, angle of incidence or angle of refraction, when light travels from denser medium to rarer medium.



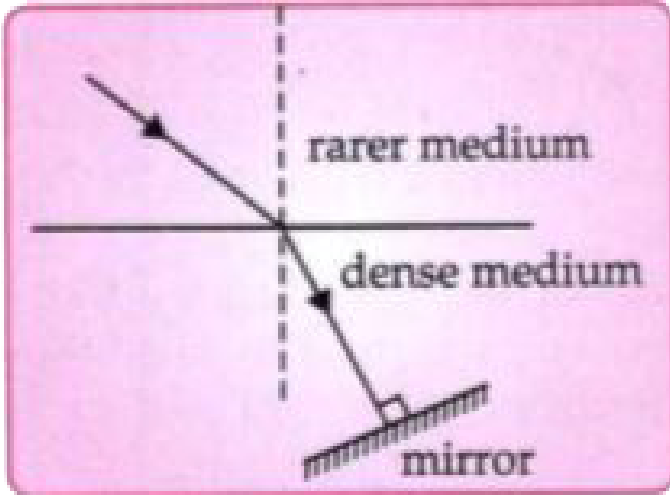
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**16.** Rishi is surprised when he sees water boiling at  $115^{\circ} C$  in a container. Give reasons as to why water can boil at the above temperature.



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**17.** A ray of light is moving from a rarer medium to a denser medium and strikes a plane mirror placed at  $90^{\circ}$  to the direction of the ray as shown in the diagram.

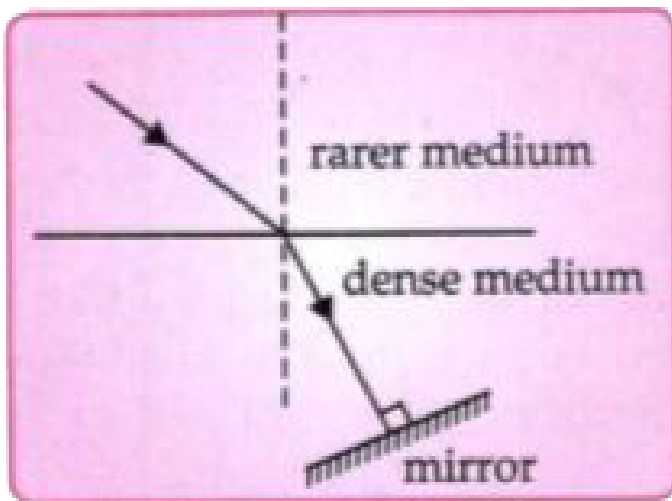


Name the principle you have used to mark the arrows to show the direction of the ray.

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**18.** A ray of light is moving from a rarer medium to a denser medium and strikes a plane mirror placed at  $90^\circ$  to the direction of

the ray as shown in the diagram.



Name the principle you have used to mark the arrows to show the direction of the ray.

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**19.** A particular type of high energy invisible electromagnetic wave help us to study the

structure of crystals. Name these rays and give another important use of these rays.



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**20.** What is the main energy transformation that occurs in:

Photosynthesis in green leaves.



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**21.** What is the main energy transformation that occurs in:

Charging of a battery.



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**22.** An object is placed in front of a converging lens at a distance greater than twice the focal length of the lens. Draw a ray diagram to show the formation of the image.



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**23.** Which part of an electrical appliance is earthed?



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**24.** State a relationship between electrical power, resistance and potential difference in an electrical circuit.



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25. What are mechanical waves ?



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26. Name one property of waves that do not change when the wave passes from one medium to another.



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**Section B**



1. Define joule..the S.I. unit of work and establish a relationship between the S.I. and C.G.S. units of work.



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2. Draw a displacement-distance graph for two waves A and B such that the amplitude of wave A is three times that of wave B.



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3. Give one example of forced vibration.



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4. State two necessary conditions for hearing a distance echo.



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5. Explain, why in daylight an object appears red when seen through a red glass and black

when seen through a blue glass?



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6. Name the extreme colours in pure spectrum of light.



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7. A substance has nearly zero resistance at a temperature of 1 K What is such a substance called?



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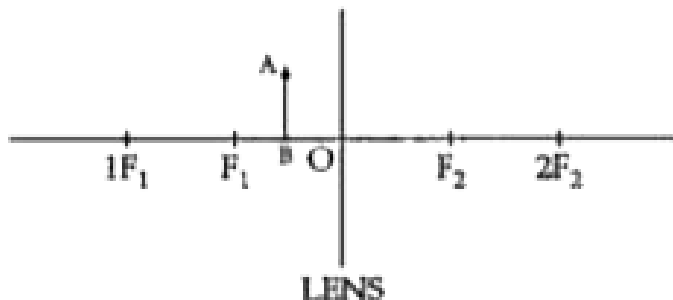
8. State the factors affecting the resistance of a conductor.



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9. An object AB is placed between O and  $F_1$  on the principal axis of a converging lens as shown in the diagram. Copy the diagram and by using three standard rays starting from

point A, obtain an image of the object AB.



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**10.** The wavelength of waves produced on the surface of water is 20 cm. If the wave velocity is  $24 \text{ ms}^{-1}$ , calculate

The number of waves produced in one second  
and



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**11.** The wavelength of waves produced on the surface of water is 20 cm. If the wave velocity is  $24 \text{ m s}^{-1}$ , calculate

The time required to produce a wave.



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**12.** (a) How does the angle of deviation produced by a prism change with increase in

the angle of incidence. Draw a curve showing the variation in the angle of deviation with the angle of incidence at a prism surface.

(b) Using the curve in part (a) above, how do you infer that for a given prism, the angle of minimum deviation  $\delta_{\min}$  is unique for a given light.



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**13.** How does the angle of minimum deviation produced by a prism change with increase in

(i) the wavelength of incident light, and (ii) the refracting angle of prism ?



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**14.** Give three reasons for the loss in energy in a machine.



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**15.** An electric iron is rated at 220 V, 2 kW.

If the iron is used for 2 h daily, find the cost of



running it for one week if it costs 34.25 per kWh.



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**16.** An electric iron is rated at 220 V, 2 kW.

Why is the fuse absolutely necessary in a power circuit?

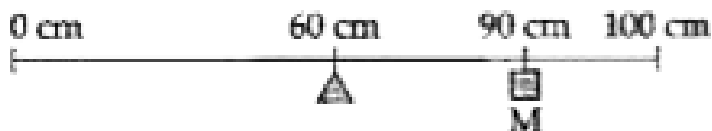


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17. Name the factor affecting the Centre of gravity of a body.

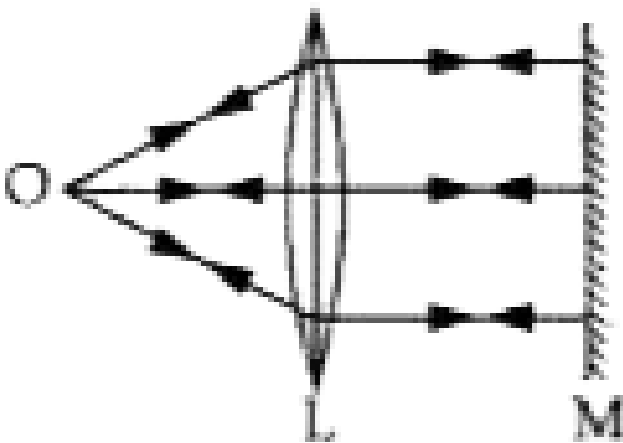
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18. A uniform meter scale is kept in equilibrium when supported at the 60 cm mark and a mass weight of the scale is greater than, less than or equal to the weight of mass M.



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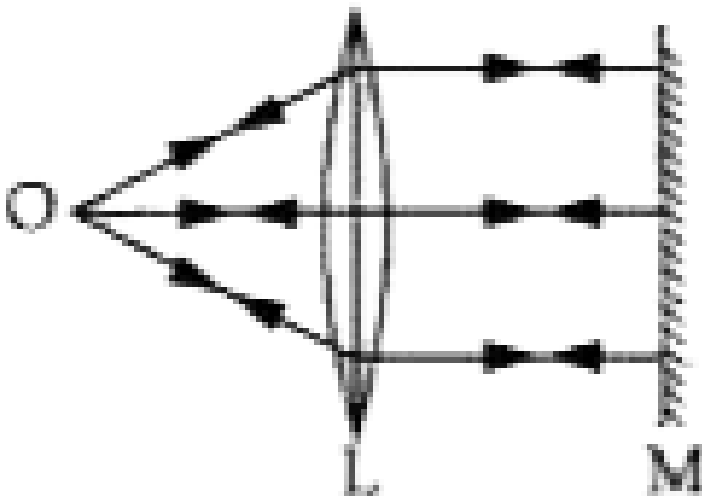
19. The given ray diagram illustrates the experimental set up for the determination of the focal length of a converging lens using a plane mirror.



state the magnification of the image formed .



20. The given ray diagram illustrates the experimental set up for the determination of the focal length of a converging lens using a plane mirror.



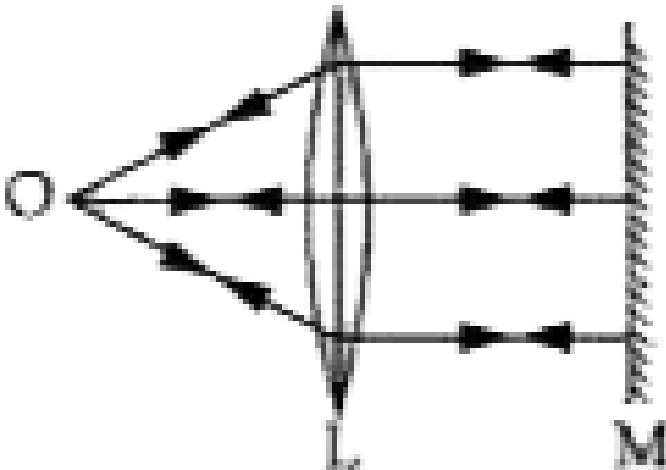
write two characteristics of the image formed





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21. The given ray diagram illustrates the experimental set up for the determination of the focal length of a converging lens using a plane mirror.



What is the name given to the distance

between the object and optical centre of the lens in the given diagram?



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**22.** A cell is sending current in an external circuit. How does the terminal voltage compare with the e.m.f. of the cell ?



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**23.** What is the purpose of using a fuse in an electrical circuit?



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**24.** What characteristics should a fuse wire have?



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**25.** Define heat capacity of a substance.



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26. What is the relationship between heat capacity and specific heat capacity of a substance ?



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27. Renewable sources of energy must be encouraged to meet growing demands of



energy. Give suggestions to support your answer.



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**28.** A glass slab is placed over a piece of paper on which VIBGYOR is printed with each letter into its corresponding colour.

(i) Will the image of all the letters be in the same place?

(ii) The letter of which colour will appear to be

raised (a) maximum, and (b) minimum ?

Explain your answer.



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**29.** What will be the colour of an object which appears green in white light and black in red light?



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**30.** A slab of ice at  $0^{\circ}\text{C}$  is constantly heated till the steam is formed at  $100^{\circ}\text{C}$ . Draw a graph showing the change in temperature with time. Label the various parts of the graph properly.



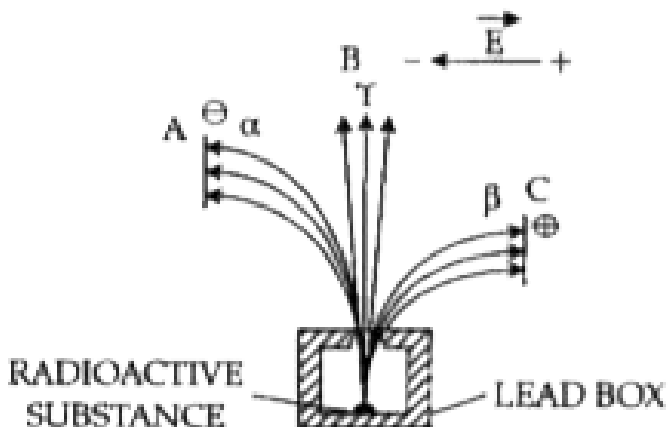
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**31.** Give 4 uses of isotopes.



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32. Radiations given out from a source when subjected to an electric field in a direction perpendicular to their path are shown below in the diagram. The arrows show the path of the radiation A, B and C. Answer the following questions in terms of A, B and C. Name the radiation which is unaffected by the electric field.

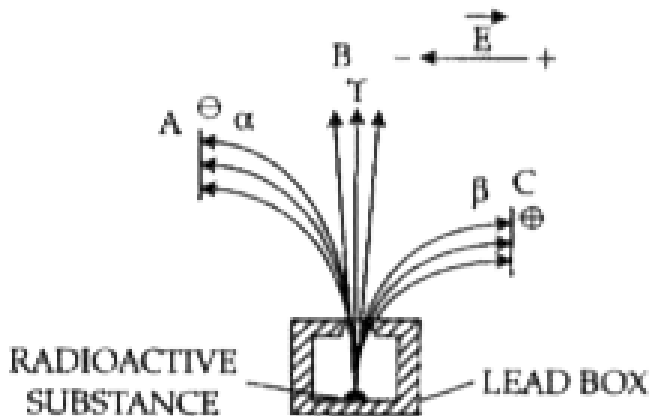




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**33.** Radiations given out from a source when subjected to an electric field in a direction perpendicular to their path are shown below in the diagram. The arrows show the path of the radiation A, B and C. Answer the following questions.in terms of A, B and C. Why does the

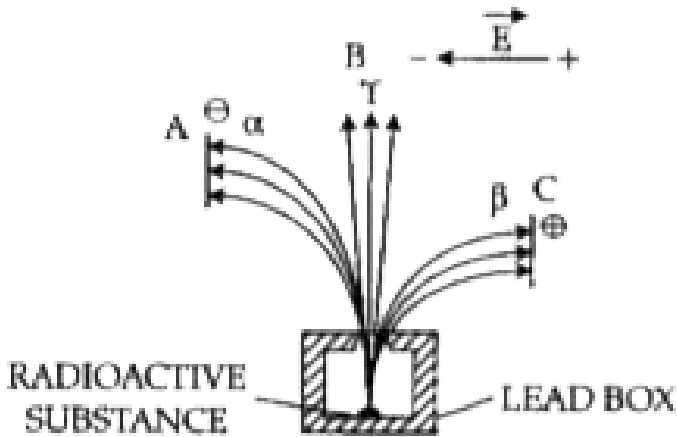
radiation C deflect more than A?



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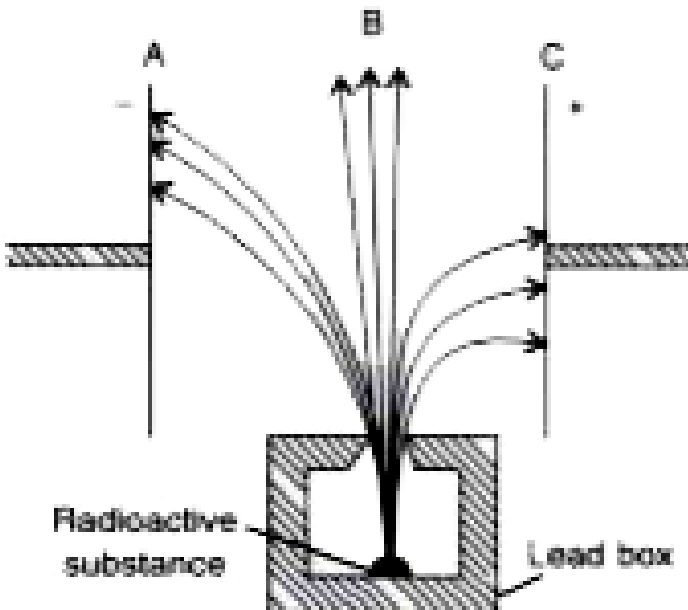
**34.** Radiations given out from a source when subjected to an electric field in a direction perpendicular to their path are shown below in the diagram. The arrows show the path of

the radiation A, B and C. Answer the following questions.in terms of A, B and C. Which among the three causes the least biological damage externally?



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**35.** Radiations given out from a source when subjected to an electric field in a direction perpendicular to their path are shown below in the diagram. The arrows show the path of the radiation A, B and C. Answer the following question in terms of A, B and C.





Name the radiation which is used in carbon dating.



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