



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SELF ASSESSMENT PAPER -2

Section A

1. State the conditions required by a body to be in equilibrium.



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2. What happens to the resistivity of semi-conductors with the increase in temperature?



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3. Differentiate between Single fixed and Single movable pulley.



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4. The power of a lens is $-5D$.

(i) Find its focal length.

(ii) Name the type of lens.



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5. Calculate the quantity of heat produced in a 20Ω resistor carrying 2.5 A current in 5 minutes.



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6. Why is white light considered to be polychromatic in nature?



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7. Give the range of the wavelength of those electromagnetic waves which are visible to us.



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8. A ray of light, after refracting through a concave lens, emerges parallel to the principal axis. Draw a ray diagram to show the incident ray and its corresponding emergent ray.



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9. An electrical heater is rated 4 kW, 220 V. Find the cost of using this heater for 12 h, if one kWh of electrical energy cost Rs. 3.25.



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10. How does earthing prevent electrical shock?



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11. State one important advantage and disadvantage each of using nuclear energy for producing electricity.



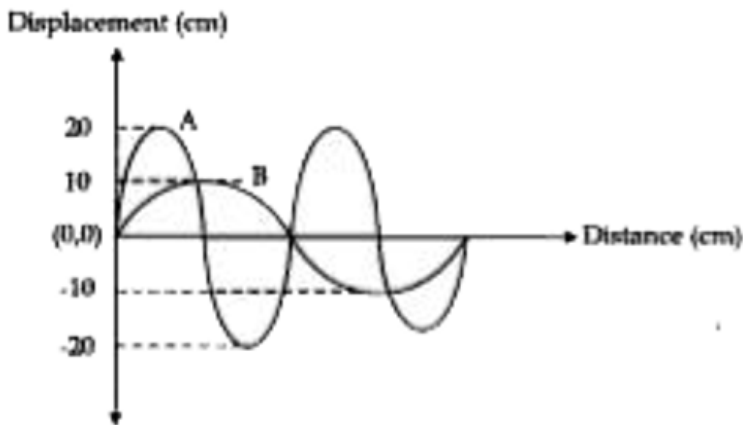
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12. Define heat capacity and state its SI unit.



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13. Displacement distance graph of two sound waves A and B, travelling in a medium, are shown in the diagram below.



Study the two sound waves and compare their

:

(i) Amplitudes, (ii) Wavelengths



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14. A boy uses blue colour of light to find the refractive index of glass. He then repeats the experiment using red colour of light. Will the refractive index be the same or different in the two cases? Give a reason to support your answer.



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15. Which of the radioactive radiations occurs in the following cases :

Can cause severe genetical disorder?



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16. Which of the radioactive radiations :
are deflected by an electric field ?



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17. When a ray of light passes from air to glass, for what angle of incidence, the ray will not be deviated?



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18. What is meant by refraction of light?



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19. What is the cause of refraction of light?



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20. An ultrasonic wave is sent from a ship towards the bottom of the sea. It is found that the time interval between the sending and the receiving of the wave is 1.5 s. Calculate the depth of the sea, if the velocity of sound in sea water is 1400ms^{-1} .



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21. How is work done by a force measured when the force :
is in the direction of displacement.



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22. How is work done by a force measured when the force :
is at an angle of displacement



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23. Suggest one way, in each case, by which we can detect the presence of:

(1) Infra-red radiations

(2) Ultraviolet radiations



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24. State any one use of infrared radiations.



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25. Why are burns caused by steam more severe than those caused by boiling water at the same temperature?



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26. Name the waves used for echo depth sounding.



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1. Give one reason of their use for the above purpose.



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2. Why are these waves mentioned in (i) above, not audible to us?



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3. With reference to the direction of action, how does a centripetal force differ from a centrifugal during uniform circular motion ?



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4. What is meant by the terms (1) amplitude (2) frequency, of a wave ?



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5. Explain, why stringed musical instruments, like the guitar, are provided with a hollow box



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6. What is an Ohmic resistor ?



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7. Two copper wires are of the same length, but one is thicker than the other :

(a) Which wire will have more resistance?

(b) Which wire will have more specific resistance?



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8. Derive a relationship between S.I. and C.G.S. unit of work.



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9. A Force F acts on a body and displaces it by a distance S in direction at an angle θ with the direction of force ,(a) Write the expression for the work done by the force,(b)What should be the angle between the force and displacement so that the work done is (i)zero ,(ii)Maximum ?



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10. In what unit does the domestic electric meter measures the electrical energy

consumed? State the value of unit in SI unit of energy.



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11. Why should switches always be connected to the live wire?



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12. Give one precaution that should be taken while handling switches.



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13. An electrical gadget can give an electric shock to its user under certain circumstances. Mention any two of these circumstances.



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14. What preventive measure provided in a gadget can protect a person from an electric shock?



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15. Jatin puts a pencil into a glass container having water and is surprised to see the pencil in a different state.

What change is observed in the appearance of the pencil?



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16. Jatin puts a pencil into a glass container having water and is surprised to see the pencil

in a different state.

Name the phenomenon responsible for the change.



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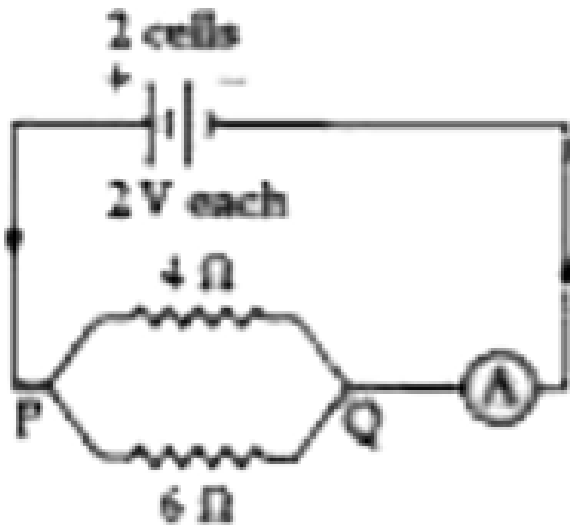
17. Jatin puts a pencil into a glass container having water and is surprised to see the pencil in a different state.

Draw a ray diagram showing how the eyes saw the pencil.



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18. With reference to the diagram given below,

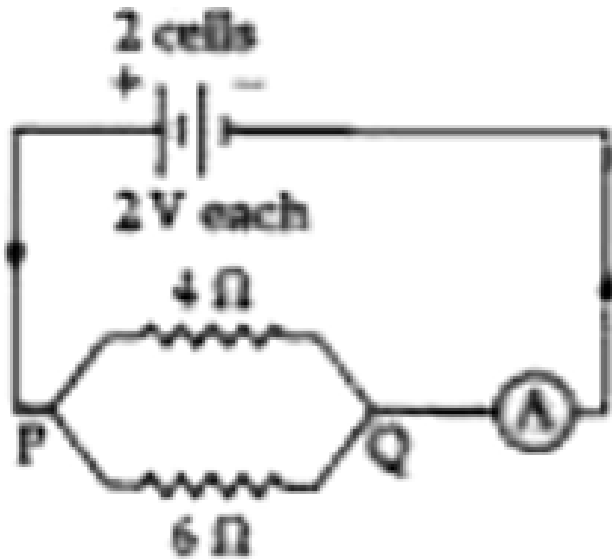


The equivalent resistance between P and Q.



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19. With reference to the diagram given below,

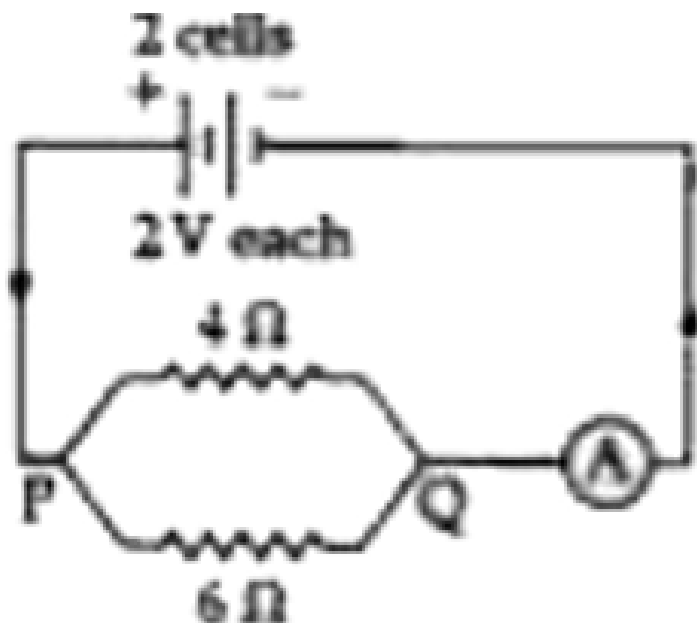


The reading of the ammeter.



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20. With reference to the diagram given below,



The electrical power between Pand Q.



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21. Define the term refractive index of a medium. Can it be less than 1 ?



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22. A coin placed at the bottom of a beaker appears to be raised by 4.0 cm. If the refractive index of water is $\frac{4}{3}$, find the depth of the water in the beaker.



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23. What is the principle of method of mixture ? What other name is given to it? Name the law on which this principle is based.



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24. What is the other name given to it?



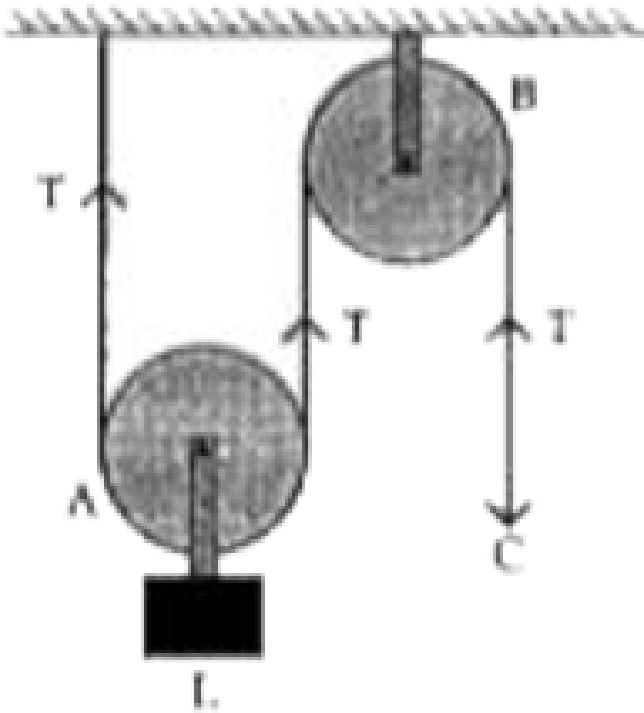
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25. Name the law on which this principle is based.



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26. From the diagram given below, answer the questions that follow:



What kind of pulleys are A and B?



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27. From the diagram given below, answer the questions that follow:



State the purpose of pulley B.



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28. From the diagram given below, answer the questions that follow:

What effort has to be applied at C to just raise

the load $L=20$ kgf? (Neglect the weight of pulley A and friction).



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29. A linear object is placed on the axis of a lens. An image is formed by refraction in the lens. For all positions of the object on the axis of the lens, the positions of the image are always between the lens and the object.

(i) Name the lens.

(ii) Draw a ray diagram to show the formation

of the image of an object placed in front of the lens at any position of your choice except infinity.



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30. When does the nucleus of an atom tend to be radioactive ?



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31. How is the radioactivity of an element affected, when it undergoes a chemical change to form a chemical compound?



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32. State one use and one harmful effect of radioactivity.



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33. Write an expression for the heat energy liberated by a hot body.



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34. Some heat is provided to a body to raise its temperature by $25^{\circ}C$. What will be the corresponding rise in temperature of the body as shown on the Kelvin scale ?



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35. What happens to the average kinetic energy of the molecules as ice melts at $0^{\circ}C$?



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36. Why is radioactivity considered to be a nuclear phenomenon?



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37. The isotope of ${}_{92}\text{U}^{238}$ decays by α -emission to an isotope of thorium (Th). The thorium isotope decays by β -emission to an isotope of protactinium (Pa). Write down the equation to represent these two nuclear changes.



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