



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SAMPLE QUESTION PAPER 2

Section A

1. Name the material used for making a Calorimeter.



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2. Draw a well labelled circuit diagram for the verification of Ohm's law.



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



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4. Draw a ray diagram to show how a convex lens can be used as a magnifying glass.



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5. A metal ball of mass 60 g falls on a concrete floor from a vertical height of 2.8 m and rebounds height of 1.3 m. Find the change in K.E. in S.I. units.



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6. What is the work done by a force when the force is:

Normal to the displacement produced.



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7. How is work done by a force measured when the force :

is in the direction of displacement.



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8. State the S.I. unit of specific heat capacity and heat capacity.



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9. Draw a ray diagram to show the refraction of a monochromatic ray through a prism when it suffers minimum deviation. How is the angle of emergence related to the angle of incidence in the position.



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10. Explain why a single fixed pulley is used despite no gain in mechanical advantage.



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11. A metal wire has a resistance of 60Ω . It is cut into three equal lengths. Find the equivalent resistance when two parts are connected in parallel and the third part is in series with them.



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12. Establish a relation between an electron volt and the S.I. unit of the physical quantity which it measures.



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13. Why is the earth pin of a three-pin plug made longer and thicker?



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14. Write the energy conversions in

Microphone



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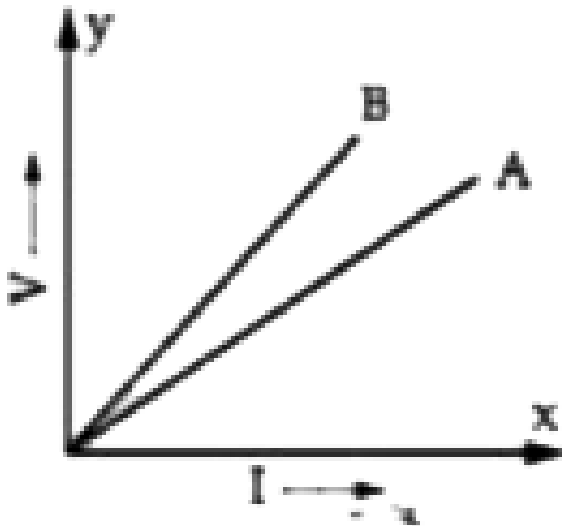
15. Write the energy conversions in

Lighted candle



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16. The V-I graph for a series combination and for a parallel combination of two resistor is shown in the figure below. Which of the two A or B, represents the parallel combination? Give a reason for your answer.



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17. What characteristics of sound would change if there is a change in its :

Amplitude



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18. Which characteristics of sound will change if there is a change in its waveform.



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19. Which cools faster, Land or Water? Give a reason for your answer.



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20. State any two properties of α radiation.



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21. Explain why scissors for cutting cloth may have blades longer than the handles, but

shears for cutting metals have short blades and long handles.



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22. Two lamps, one rated 40 W, 220 V and the other having resistance of 605Ω and rated 60 W, 220 V are connected in parallel combination across a 220 V supply. Calculate the current drawn from the supply line.



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23. Mention two important precautions that should be taken while handling radioactive materials



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Section B

1. Show that the sum of kinetic energy and potential energy (ie, total mechanical energy) is always conserved in the case of a freely falling body under gravity (with air resistance

neglected from a height by finding it when (i) the body is at the top c) the body has fallen a distance in the body has reached the ground.



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2. A uniform metre rod is balanced at the 70 cm mark by suspending a weight of 50 gf at the 40 cm mark and 200 gf at the 95 cm mark. Draw a diagram of the arrangement and calculate the weight of the metre rod.



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3. Draw a diagram of a pulley system of velocity ratio 4. Calculate its mechanical advantage efficiency is 90%.



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4. What is understood by lateral displacement? State two factors on which it depends.



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5. An object is kept at a distance of 15 cm from a convex lens of focal length 10 cm. Calculate the image distance and state the characteristics of the image formed.



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6. Write two properties common to all the electromagnetic radiations.



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7. Name two sources, each of infrared radiations and ultraviolet radiations.



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8. A vibrating tuning fork is placed over the mouth of a burette filled with water. The tap of the burette is opened and the water level gradually starts falling. It is found that the sound from the tuning fork becomes very loud for a particular length of the water column.

Why does the sound become very loud for this length of the water column?



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Why does the sound become very loud for this length of the water column?



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10. Define the power of a lens.



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11. A child is using a spectacle with power of -2.5 D. What is meant by the negative sign?



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12. Find the focal length of the lens used.



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13. A man standing in front of a wall produces a sound and hears an echo after 3 s. He walks x m away from the wall and produces the same sound. Now he hears an echo after 5.25 s. Calculate distance he walked away from the wall. (Speed of sound in air is 340 m/s)



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14. What characteristics should a fuse wire have?



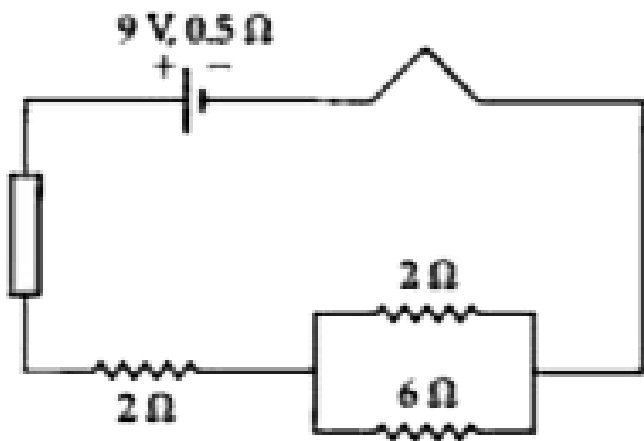
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15. Name two factors on which the internal resistance of a cell depends and state how does it depend on the factors stated by you.



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16. In the circuit diagram given below, a cell of 9 V and internal resistance of $0.5(\Omega)$ is connected across a resistor A of 2Ω in series and two resistors of 2Ω and 6Ω in parallel.



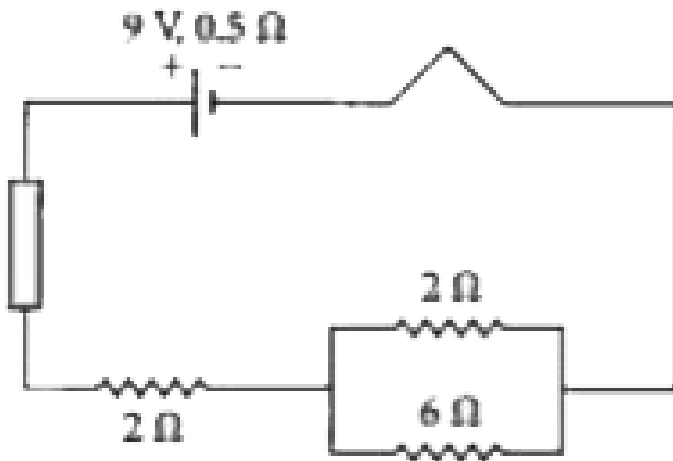
Find

The total resistance



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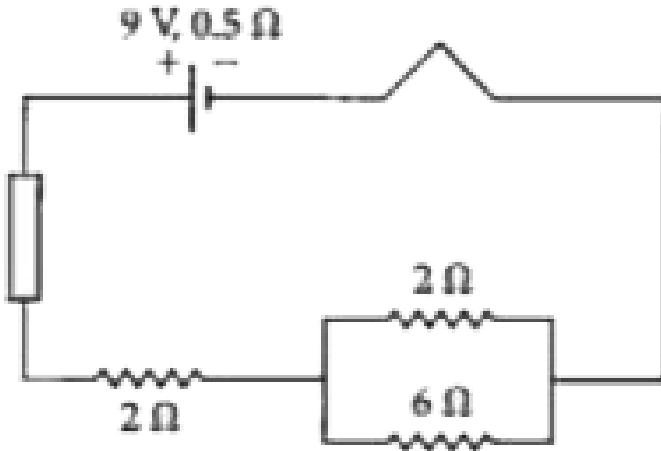
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Find

The total current

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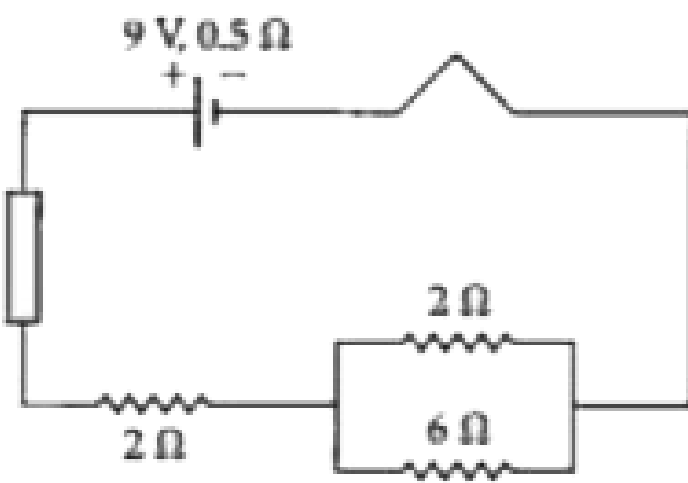
Find

The current in the 6Ω resistor.



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19. In the circuit diagram given below, a cell of 9 V and internal resistance of $0.5(\Omega)$ is connected across a resistor A of 2Ω in series and two resistors of 2Ω and 6Ω in parallel.



Find

The potential difference across the terminals of the cell.



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20. Define latent heat of fusion of ice.



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21. What happens to the heat supplied to the substance when, the heat supplied causes no change in the temperature of the substance?



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22. Two liquids A and B have specific heat capacities $2.5Jg^{-1}^{\circ}C$ and $3.2Jg^{-1}^{\circ}C$ respectively.

Which liquid is a good conductor of heat?

Why?



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23. Two liquids A and B have specific heat capacities $2.5 \text{ Jg}^{-1} \text{ } ^\circ \text{C}$ and $3.2 \text{ Jg}^{-1} \text{ } ^\circ \text{C}$ respectively.

Which liquid is more suitable as a liquid in radiators for cooling?



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24. A calorimeter of mass 60 g contains 180 g of water at $29^{\circ}C$. Find the final temperature of the mixture, when 37.2 g of ice at $-10^{\circ}C$ is added to it (specific heat capacity of water = $4200J/kgK$. latent heat of ice $336 \times 10^3 J/kg$. Specific heat capacity of ice = $2100J/kgK$, specific heat capacity of the calorimeter is $0.42Jg^{-1} \times C^{-1}$)



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25. What are back ground radiations?



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26. Write an equation of an alpha emission

from U_{92}^{238}



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27. What will be the change in the rate of radioactivity if the temperature of the radioactive substance is raised to four times the initial temperature?



28. An atomic nucleus A is composed of 84 protons and 128 neutrons. The nucleus A emits an alpha particle and is transformed into a nucleus B.

(i) What is the composition of B ?

(ii) The nucleus B emits a beta particle and is transformed into a nucleus C. What is the composition of C?

(iii) What is the mass number of the nucleus A ?

(iv) Does the composition of C change if it emits gamma radiations ?



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29. An atomic nucleus A is composed of 84 protons and 128 neutrons. The nucleus A emits an alpha particle and is transformed into a nucleus B.

(i) What is the composition of B ?

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composition of C?

(iii) What is mass number of the nucleus A ?

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30. An atomic nucleus A is composed of 84 protons and 128 neutrons.

Does the composition of nucleus C change if it emits gamma radiations ?



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31. Explain the meaning of the statement current rating of a fuse is 5 A..



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32. In the transmission of power, the voltage of power generated at the generating station is stepped up from 11 kV to 132 kV before it is transmitted. Why?



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