Set - A

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E 906 - Ph

ANNUAL EVALUATION 2023-24

PHYSICS

Standard: IX

Time : 1½ Hour
Total Score : 40

Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time.

Answer <u>any three</u> questions from 1 to 4. (1 score each) **(3 x1 = 3)**

1. Choose the medium in which the sound has maximum speed. (1)

   (Air, Sea water, Aluminium, Helium)

2. Identify the relation from the first pair and complete the second. (1)

   Resistance : ohm
   Potential difference : .....

3. Two objects of masses x kg and y kg are kept at a distance of z metre. The gravitational force between them is (1)

   $\left(F=\frac{Gxy}{z},\quad F=G\frac{xy}{z^2},\quad F=\frac{G(x+y)}{z^2},\quad F=\frac{xy}{z^2}\right)$. Here G is the gravitational constant.

4. A body of mass 5 kg is at rest. Its momentum is .....kgm/s (1)

   (5 , 50 , 49 , 0)

Answer <u>any seven</u> questions from 5 to 13. (2 score each) **(7 x2 = 14)**

5. Write down any two methods to be adopted to escape from Tsunami. (2)

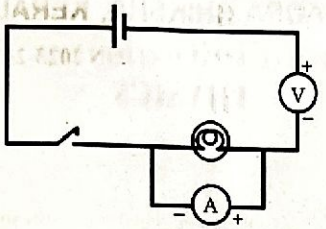
6. Four cells having emf 1.5 V each are connected in series.

   a) Find the total emf of this combination. (1)

   b) What will be the emf of the combination, if all these cells are connected in parallel? (1)

7. It is observed that the time taken to hear the echo of a particular sound produced in an experiment conducted in a school ground is different in the morning and at the noon. What may be the reason? Explain. (2)

8. Observe the following diagram. Redraw the diagram by correcting the mistakes, if any. (2)



9. Classify the following statements in the table given below. (2)

a) Unit is kgwt

b) Scalar quantity

c) Quantity of matter

d) Measured using a spring balance

Mass	Weight

10. Ultrasonic waves from a ship reflects back from a rock at the bottom of the sea. If the time taken to receive back the echo is 2 s, calculate the distance between the rock and the ship. (Speed of sound through seawater is nearly 1522 m/s) (2)

11. A car travels with a velocity 8 m/s. It is brought to rest by applying brakes for 4 s. If the uniform retardation of the car is 2 m/s^2, calculate the distance travelled by the car after applying the brakes. (2)

12. Write down whether the following statements are true or false. Rewrite the statements by changing the underlined words, if the statement is false.

a) The resistance of a conductor increases as its area of cross section <u>decreases.</u> (1)

b) Rheostat is a device used to <u>measure</u> the current in a circuit. (1)

13. Write down any two situations in which ultrasonic sound is used. (2)

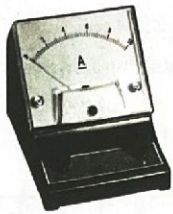
Answer <u>any five</u> questions from 14 to 19. (3 score each) **(5 x3 = 15)**

14.

a) Which type of wave motion is indicated in the figure? (1)

b) What do C_1 and R_1 represent? (1)

c) Choose the distance indicating the wave length of this wave from the following. (C_1R_1, C_1R_2, C_1C_2, C_1C_3). (1)

15. 

a) Name the device shown in the figure. (1)

b) Name the physical quantity measured using this instrument. Write down its unit. (1)

c) Define the physical quantity that you have identified. (1)

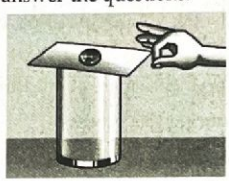
16. a) Which are the two types of mechanical energy? (1)

b) Identify the type of mechanical energy possessed in the following situations.

(i) A moving car. (1)

(ii) A stone hung at a certain height. (1)

17. Observe the figure and answer the questions.



a) When the card is suddenly struck off, the coin falls into the tumbler. Name the property of the coin responsible for this. (1)

b) How is this property related to the mass of a body? (1)

c) Write down any one situation in life where this relation is made use of. (1)

18. Match columns A, B and C suitably. (3)

A	B	C
Surface tension	Frictional force in liquids	Farmers make the top soil loose
Capillary rise	Cohesive force	Affects the speed of motion of liquids
Viscosity	Adhesion is greater than cohesion	Small drops of mercury assume spherical shape

19. Consider two copper wires of the same area of cross section having lengths 2 m and 1 m respectively.

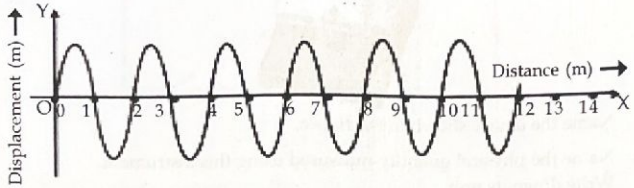
a) Which of these has a greater resistance? (2 m/1 m). (1)

b) If the resistivity of 1 m wire is X Ω m, what is the resistivity of 2 m wire? (1)

c) Write down the situation in which the resistivity of a material changes. (1)

Answer any two questions from 20 to 22. (4 score each) (2 x 4 = 8)

20) Observe the following figure representing a transverse wave.



a) What is the wavelength of this wave? (1)

b) Calculate the speed of the wave if it travelled the distance shown in the graph in 0.5 s. (1)

c) Calculate the frequency of this wave. (1)

d) What happens to the wavelength when the frequency increases by keeping the speed of the wave a constant? (1)

21. A pump takes 2 minute to fill a tank of capacity 1000 L of water. The tank is at a hight of 30 m. (Given, g = 10 m/ s^2)

a) Calculate the weight of 1000 L (The mass of one litre of water is 1 kg). (1)

b) Calculate the work done during this process. (2)

c) Calculate the power of this pump. (1)

22. a) Complete the following table suitably and answer the questions below it.

Voltage (V) (volt)	Current (I) (ampere)	Resistance (R) (ohm)
24	1	24
12	(i)	24
(ii)	0.25	24

(2)

b) State the law applied to complete the above table. (1)

c) Write down the situation in which this law is not obeyed. (1)