

### Physics Set-2

1. Which of the following have same dimension?
  - a. Specific heat & Latent heat
  - b. Momentum & Impulse
  - c. Moment of Inertia & Moment of Momentum
  - d. Tension & Surface tension
2. A car travelling with a speed of 70 km/h on a straight road is ahead of a bike travelling with a speed of 80 km/h. How would the relative velocity be altered if the bike is ahead of the car?
  - a. The relative velocity will not alter at all.
  - b. The relative velocity will alter.
  - c. May or may not alter.
  - d. None of these.
3. If  $R$  is the effective resistance of ' $n$ ' equal resistance connected in parallel, then the effective resistance of these resistors connected in series is given by
  - a.  $nR^2$
  - b.  $n^2R$
  - c.  $\frac{R}{n^2}$
  - d.  $\frac{R^2}{n}$
4. A ball is released from a certain height. It losses 50% of its kinetic energy on striking the ground. It will attain a height again equal to
  - a. One-fourth of the initial height.
  - b. Half of the initial height.
  - c. Three-fourth of the initial height.
  - d. None of these.
5. What are the two angles of projection of a projectile projected with velocity 30 m/sec so that the horizontal range is 45m? ( $g = 10 \text{ m/s}^2$ )
  - a.  $2\theta = 30^\circ$  or  $150^\circ$
  - b.  $\theta = 35^\circ$  or  $45^\circ$
  - c.  $2\theta = 0^\circ$  or  $150^\circ$
  - d. None of these.

6. What is the angle between velocity vector & acceleration vector in uniform circular motion?
- $45^\circ$
  - $0^\circ$
  - $180^\circ$
  - $90^\circ$
7. A particle is moving on a straight line path with constant acceleration directed along the direction of instantaneous velocity. Which of the following statements are false about the motion of particle?
- The average velocity is less than the average speed.
  - The average velocity is equal to the instantaneous velocity.
  - The distance covered is equal to magnitude of displacement.
  - The particle may reverse the direction of the motion.
8. Four particles given have same momentum. Which one of these have maximum kinetic energy?
- Proton
  - Electron
  - Deuteron
  - $\alpha$  - particle
9. 1000 small water drops of equal volume have equal potentials.. if they coalesce to form one large drop, then the ratio of the potential of the large drop to each small drop is
- 1
  - 10
  - 100
  - 1000
10. To convert a galvanometer into a voltmeter, we connect
- Low resistance in series.
  - High resistance in series.
  - Low resistance in parallel.
  - High resistance in parallel.
11. Velocity of light is maximum in
- Diamond
  - Water
  - Glass
  - Vacuum
12. The decay constant of radioactive element Radium is  $4.28 \times 10^{-4} \text{ year}^{-1}$ . Its half-life will be
- 2000 years
  - 1240 years
  - 63 years
  - 1620 years
13. A body dropped from top of a tower falls through 40m during the last two seconds of its fall. The height of the tower is ( $g = 10 \text{ m/s}^2$ )
- 60m
  - 45m
  - 80m
  - 50m
14. Hydraulic brake is based on which principle?
- Archimedes' principle
  - Pascal's Law
  - Kirchoff's principle
  - None of these

15. A wire of length 'L' is hanging from a fixed support. The length changes to  $L_1$  &  $L_2$  when masses  $M_1$  &  $M_2$  are suspended respectively from its free end. Hence the length 'L' is equal to

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|------------------------|------------------------------------|
| a. $\frac{L_1+L_2}{2}$ | c. $\frac{L_1L_2+L_2M_1}{M_1+M_2}$ |
| b. $\sqrt{L_1L_2}$     | d. $\frac{L_1M_2-L_2M_1}{M_1+M_2}$ |

16. A projectile is fired at an angle of  $45^\circ$  with the horizontal. Elevation angle of the projectile at its highest point as seen from the point of projection is

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|-----------------------------------|----------------------------|
| a. $\tan^{-1} \frac{\sqrt{3}}{2}$ | c. $60^\circ$              |
| b. $45^\circ$                     | d. $\tan^{-1} \frac{1}{2}$ |

17. The earth's magnetic field always has the vertical component except at

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|---------------------|---------------------------|
| a. Magnetic poles   | c. Geographic poles       |
| b. Magnetic equator | d. At $45^\circ$ latitude |

18. A body of mass 2 kg is kept stationary by pressing to a vertical wall by a force of 100N. The co-efficient of friction between wall & body is 0.3. The frictional force is equal to

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|--------|---------|
| a. 6N  | c. 600N |
| b. 20N | d. 700N |

19. A current 'i' is flowing through a resistance connected to a primary cell. Now the resistance is reduced to half, the new current through the resistance will be

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|---------|----------|
| a. i    | c. $<2i$ |
| b. $2i$ | d. $>2i$ |

20. At absolute zero, an intrinsic semiconductor has

- Free electron in excess
- Free holes in excess
- No free electron & holes
- Equal no. of free electron & holes