

### Physics Set-3

1. A weight 'mg' is suspended from the middle of a rope whose ends are at same level. The rope is no longer horizontal. Find the same level. The rope is no longer horizontal. Find the minimum tension required to straighten the rope completely is
  - a) 0
  - b)  $\frac{mg}{2}$
  - c)  $\frac{mg}{2}$
  - d) None of these
2. Find the angle of projection for a body to have same horizontal range & maximum height.
  - a)  $\tan^{-1} 4$
  - b)  $\sin^{-1} 4$
  - c)  $\sin^{-1} 5$
  - d) None of these
3. Calculate the angular speed of the flywheel making 240rpm.
  - a)  $50\pi$  rad/sec
  - b)  $80\pi$  rad/sec
  - c) 0
  - d) None of these
4. A balloon is going upward with velocity 12 m/sec. It releases a packet when it is at a height 65m from the ground. How much time the packet will take to reach the ground? ( $g = 10 \text{ m/s}^2$ )
  - a) 5 sec
  - b) 6 sec
  - c) 7 sec
  - d) 8 sec
5. In which of the following cases the centre of mass of a rod is certainly not at its centre?
  - a) The density increases from left to right up to the centre & then decreases.
  - b) The density decreases from left to right up to the centre & then increases.
  - c) The density continuously increases from left to right.
  - d) The density continuously decreases from left to right.
6. A hollow metallic sphere of radius 3cm is charged such that the potential on its surface is 60V. The potential at a distance 2cm from the centre is
  - a) 0
  - b) 30V
  - c) 60V
  - d) 40V

7. A junction diode when forward biased behave as a device of
- Infinite resistance
  - Low resistance
  - High resistance
  - No resistance
8. The ratio of average value of alternating voltage over a full cycle to peak voltage is
- $\frac{\pi}{2}$
  - $\frac{2}{\pi}$
  - 0
  - $\pi$
9. The proportionality relation between half-life  $T$  & radioactive decay constant  $\lambda$  is
- $T \propto \lambda$
  - $T \propto \frac{1}{\lambda}$
  - $T \propto \frac{1}{\lambda^2}$
  - $T \propto \frac{1}{\lambda^4}$
10. You are given four bulbs of 25W, 40W, 60W & 90W. Which of them has lowest resistance?
- 25W
  - 40W
  - 60W
  - 90W
11. The efficiency of carnot's engine is equal to
- 1
  - <1
  - >1
  - 0
12. A cell of emf 'E' is connected across a conductor of resistance 'R'. If the potential difference across the terminals of conductor is found to be 'V', then the internal resistance of the cell is
- $RV(E - V)$
  - $\left(\frac{E-V}{V}\right)R$
  - $\left(\frac{E-R}{V}\right)R$
  - $R(E - V)$
13. A light & heavy body have equal kinetic energy. Which one has greater momentum?
- The light only.
  - The heavy body.
  - Both have equal momentum.
  - It's not possible to say anything without additional information.
14. The time period of a satellite of earth is 5 hours. If the separation between the earth & satellite is increased to four times the previous value, the new time period will become
- 10 hours
  - 60 hours
  - 40 hours
  - 20 hours

15. If a shell fired from a cannon, explodes in mid-air then
- Its total kinetic energy increases.
  - Its total momentum decreases.
  - Its total momentum increases.
  - None of these
16. Application of Bernoulli's theorem can be seen in
- Dynamic lift of aeroplane
  - Hydraulic process
  - Helicopter
  - None of these
17. A breaker full of  $H_2O$  is kept in a room. If it cools from  $80^\circ C$  to  $75^\circ C$  in  $t_1$  minutes,  $75^\circ C$  to  $70^\circ C$  in  $t_2$  minutes &  $70^\circ C$  to  $65^\circ C$  in  $t_3$  minutes, then
- $t_1 > t_2 > t_3$
  - $t_1 = t_2 = t_3$
  - $t_1 < t_2 = t_3$
  - $t_1 < t_2 < t_3$
18. With rise in temperature, which one of the following force can never increase?
- Elastic force
  - Frictional force
  - Viscous force
  - Force due to surface tension
19. The -ve value of susceptibility is possessed by a substance which is
- Ferromagnetic
  - Diamagnetic
  - Paramagnetic
  - Nonmagnetic
20. B rays emitted by a radioactive material are
- e - m radiation.
  - The electrons orbiting around the nucleus.
  - Charged particles emitted by nucleus.
  - Neutral particles.