

1. A cylindrical block of wood floats in water with four-fifths of its volume submerged in water. The relative density of wood is
(a) 0.8 (b) 0.9
(c) 1.0 (d) 1.2
2. A diode can be used to
(a) amplify electrical signals
(b) rectify alternating current
(c) produce electrical oscillations
(d) produce gamma rays
3. A fireman used a rope that can withstand a tension equal to three-fourths of his weight. If g is the acceleration due to gravity, the maximum acceleration with which he can slide down the rope is
(a) g (b) $3g/4$
(c) $g/2$ (d) $g/4$
4. A hot and a cold body are kept in vacuum separated from each other. Which of the following cause decrease in temperature of the hot body?
(a) radiation
(b) convection
(c) conduction
(d) temperature remains unchanged
5. A liquid flows through a capillary tube. Then the velocity of the liquid is
(a) maximum at the walls of the tube
(b) constant at all points in the cross section of the tube
(c) maximum along the axis of the tube
(d) independent of the pressure-head
6. A long thread suspended from a fixed point has a small mass swinging to and fro at its lower end
(a) the potential energy of the mass is maximum in the middle of the swing
(b) the kinetic energy is maximum in the middle of the swing
(c) the potential energy is always equal to the kinetic energy
(d) the sum of the potential energy and the kinetic energy is maximum in the middle of the swing
7. A man carrying a load on his back bends forward because of one of the following reasons:
(a) to adjust the centre of gravity of the system such that the vertical line through the centre of gravity passes within the base
(b) the man feels lighter because of greater reaction

- (c) to prevent the load from slipping over and falling down
 - (d) to keep the centre of gravity of the system outside the body
8. A man is sitting by the side of a large lake. He hears the utterances of bathers with their mouth close to water surface more clearly than if they were at same distance away on land. This effect is due to sound waves undergoing
- (a) reflection
 - (b) refraction
 - (c) dispersion
 - (d) total internal reflection
9. A man sitting inside an open vehicle moving uniformly throws a stone vertically upwards. The stone will fall
- (a) ahead of him
 - (b) behind him
 - (c) over him
 - (d) ahead or behind him, depending on the velocity
10. A man standing at the finish line is recording the time of a race competition by means of a stop watch. He must start the watch when
- (a) he hears the sound of the starting gun
 - (b) he sees flash of light coming from the starting gun
 - (c) he sees first man leaving the starting line
 - (d) he either sees the flash or hears the sound
11. A man wearing spectacles, when working with a microscope
- (a) cannot see anything through the microscope
 - (b) should keep on wearing spectacles
 - (c) should take off his spectacles
 - (d) may work with or without spectacles
12. A medium is dispersive if
- (a) light of different wavelengths propagate at the same speed but has different frequencies
 - (b) light of different wavelengths propagate at different speeds
 - (c) light is bent gradually rather than suddenly
 - (d) light encounters different thickness of the medium in different directions
13. A mercury barometer is enclosed in a tall glass cylinder. If the air is slowly removed from the enclosure by means of a vacuum pump, the level of mercury in the barometer tube will
- (a) steadily fall

- (b) steadily rise
(c) remain unchanged
(d) suddenly fall to zero
14. A mineral associated with sedimentary rocks is
(a) Magnetite (b) Dolomite
(c) Feldspar (d) Mica
15. A motor running on electricity at the rate of 400 W raises a block of weight 120 N. If the block moves 8 m vertically in 4s, the efficiency of the motor is
(a) 24% (b) 30%
(c) 48% (d) 60%
16. A moving bullet hits a solid target resting on a frictionless surface and gets embedded in it. What is conserved in this process?
(a) both momentum and kinetic energy
(b) kinetic energy alone
(c) momentum alone
(d) neither momentum nor kinetic energy
17. A particle of mass m moves in a circular path of radius r at constant speed v . Its K.E. is
(a) mv^2/r (b) $\frac{1}{2} I\omega$
(c) $\frac{1}{2} mv^2$ (d) $\frac{1}{2} mr\omega^2$
18. A piece of metal feels hotter than a piece of wood in summer because
(a) metal expands more than wood
(b) our body is cooler than metal but warmer than wood
(c) metal is a better conductor of heat than wood
(d) metal gets hotter than wood
19. A plant with green leaves placed in red light will appear
(a) black (b) green
(c) red (d) violet
20. A pyrex tumbler does not crack when hot water is poured into it because pyrex
(a) is a strong material
(b) does not expand much on heating
(c) is a good conductor of heat
(d) expands equally from inside and outside

Answer Keys

1. (a) 2. (b) 3. (d) 4. (a) 5. (c) 6. (b) 7. (a) 8. (c) 9. (c) 10. (b)
11. (c) 12. (b) 13. (a) 14. (b) 15. (d) 16. (c) 17. (c) 18. (c) 19. (a) 20. (b)