

1. Fish can survive inside a frozen lake because
 - (a) fish are cold blooded animals
 - (b) fish can breathe when embedded in ice
 - (c) fish move to the bottom of the lake where the water is at 4°C and hence cannot freeze
 - (d) fish move to the top of the lake where the water is at 4°C and hence cannot freeze
2. For photoelectric emission, tungsten requires light of 2300 \AA . If light of 1800 \AA wavelength is incident then emission
 - (a) takes place
 - (b) may or may not take place
 - (c) depends on frequency
 - (d) don't take place
3. Graphite and heavy water are two common moderators used in a nuclear reactor. The function of the moderator is to
 - (a) slow down neutrons
 - (b) absorb neutrons
 - (c) cool the reactor
 - (d) arrest the chain reaction
4. If a magnet is cut into two pieces of equal length
 - (a) both pieces will lose their magnetism
 - (b) one piece will act as north pole and the other as south pole
 - (c) both pieces will behave as complete magnets
 - (d) one of the pieces will lose its magnetism
5. If a pendulum clock be taken from the earth to a revolving artificial satellite, it will
 - (a) run slow (b) run fast
 - (c) give the same time
 - (d) stop altogether
6. If a pendulum clock be taken from the equator to the poles it will
 - (a) run slow
 - (b) run fast
 - (c) show the same time
 - (d) stop altogether
7. If a real object is placed just inside the focal point of a diverging lens, the image is
 - (a) virtual, erect and diminished

- (b) real, inverted and enlarged
 - (c) real, inverted and diminished
 - (d) virtual, erect and enlarged
8. If a stationary electron is in a uniform magnetic field, it will be
- (a) accelerated in the direction of the field
 - (b) caused to move in a circular path
 - (c) unaffected
 - (d) caused to move in a parabolic path
9. If the original mass of a star is less than 1.4 solar mass (Chandrasekhar's mass limit), it will probably end its life as a
- (a) white dwarf (b) red giant
 - (c) neutron star (d) black hole
10. If the temperature of a gas is reduced from the room temperature to a very low temperature keeping its pressure constant, then its mean free path
- (a) is unaltered
 - (b) will increase
 - (c) will decrease as its temperature in kelvin scale
 - (d) will decrease as square of its temperature in kelvin scale
11. If two vectors \vec{A} and \vec{B} are collinear to each other, it follows that
- (a) $\vec{A} \cdot \vec{B} = 0$
 - (b) $\vec{A} + \vec{B} = 0$
 - (c) $\vec{A} \times \vec{B} = 0$
 - (d) $\vec{A} - \vec{B} = 0$
12. In a doctor's stethoscope, sound is intensified because of
- (a) resonance of sound
 - (b) constructive interference
 - (c) principle of superposition of waves
 - (d) reflection of sound
13. In a medium heat flows by the actual movement of the particles of the medium. This process of heat transmission is known as
- (a) conduction (b) radiation
 - (c) convection (d) diffraction
14. In a nuclear reactor the moderator is used to
- (a) produce fission of the nuclei
 - (b) produce fusion of the nuclei
 - (c) emit neutrons
 - (d) decrease the speed of the neutrons

15. In an earthen pot, cooling of water depends upon the
(a) outside temperature
(b) atmospheric humidity
(c) wind
(d) all the above
16. In an inelastic collision, state which of the following statements is true:
(a) Momentum is conserved and kinetic energy is conserved.
(b) Momentum is not conserved and kinetic energy is conserved.
(c) Momentum is conserved and kinetic energy is not conserved.
(d) Momentum and kinetic energy are not conserved.
17. In our homes, electricity is supplied at 220 V AC. The value 220 represents
(a) constant voltage
(b) effective voltage
(c) peak voltage
(d) average voltage
18. In which atmospheric layer are the communication satellites located?
(a) stratosphere (b) ionosphere
(c) troposphere (d) exosphere
19. It is easier to roll a stone up a sloping road than to lift it vertically upwards because
(a) work done in rolling is more than in lifting
(b) work done in lifting the stone is much more than rolling it
(c) work done in both is same but the rate of doing work is less in rolling
(d) work done in rolling a stone is less than in lifting it
20. The hammer of a pile driver has mass 500kg and must be lifted 2m in 3 seconds. Find the power in HP is nearly
(a) 4 HP (b) 4.4 HP
(c) 4.3 HP (d) 4.1 HP

Answer Keys

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