DELHI PUBLIC SCHOOL, JAMMU
SAMPLE QUESTIONS FOR TERM EXAMINATION 2019-20
(AS PER PATTERN OF CBSE SAMPLE PAPER)
CLASS XI
SUBJECT PHYSICS

Multiple choice questions (1 mark each)

Q1 Which of the following has the dimensions of pressure?

(a) $[MLT^{-2}]$ c) $[ML^{-1}T^{-2}]$

(b) $[ML^{-2}T^{-2}]$ d) $[M^{-1}L^{-1}]$

Q2 A car covers the first half of the distance between two places at 40 km/hr and another half at 60 km/hr. The

average speed of the car is

a) 40 km/hr   c) 48 km/hr

b) 50 km/hr   d) 60 km/hr

Q3 A block of mass 0.1 kg is held against a wall applying a horizontal force of 5 N on the block. If the co-efficient of friction between the block and wall is 0.54, the magnitude of the frictional force acting on the block is

a) 2.5 N   c) 0.98 N

b) 4.9 N   d)0.49 N

Q4 The decrease in the potential energy of a ball of mass 20 kg, which falls from a height of 50 cm is

a) 968 J   c) 98 J

b) 1980 J   d) none of these

Q5 Two particles A and B, initially at rest , mo0ves towards each other under mutual force of attraction. At instant

when the speed of A is 'v' and the speed of B is '2v', the speed of center of mass of the system is

a) 3v   c) v

b) 1.5v   d) zero

Fill in the blanks (1 mark each)

Q6 The total energy of a satellite rotating in orbit around earth is equal to the _____ of its kinetic energy.

Q7 The pressure exerted on liquid at any point is transmitted _____ at any point inside the liquid

Q8 The heat energy supplied to the system is used to _____ its internal energy and also to do some _____.

Q9 The collision between the gas molecules is considered to be _____.

Q10 The velocity of sound moving in direction opposite to wind direction _____.

Short answer type questions (1 marks each)

Q11 Why it is convenient to express the distances of stars in terms of the light year rather than kilometer or meter?

Q12 Is time a vector quantity? Give reason.

Q13 The artificial satellite remain in the orbit around the earth even without using any fuel. Why?

Q14 Why the igloo are made of double walls.

Q15 How oscillation can be related to the circular motion?

Short answer type questions (2 marks each)

Q16 State and prove Work-energy theorem.

Q17. State Bernoulli's . Mention its one application .

 Q18A force acts for 10 s on a body of mass 10 g, after which the force ceases to act and the body describes 50 cm in next 5 sec. find the magnitude of the force.

Q19 To a person going east in a car with a velocity of 50 km/hr, a bus appears to move toward north with a velocity $50\sqrt{3}$ km/hr. What is the actual velocity and direction of motion of the Bus.

Q20 Give reasons for the following:
(a) A load on a thief's back does not apply any force on him when he jumps from the upper story of a house.
 (b) A gun recoils on being fired.

Short answer type questions (3 marks each)

Q21. A sound wave traveling along a string is described by **$y=5x10^{-3}sin(80x-3t)$**. Calculate (i) the amplitude (ii) the wavelength (iii) frequency of the wave.   3

Q22What is a conservative force? Prove that gravitational force is conservative and frictional force is non-conservative.

Q23If a body A of mass 'M' is thrown with velocity u at an angle of 30^0 the horizontal and another body B is of the same mass be projected with the same velocity at angle 60^0 to the horizontal, then prove that the ratio of horizontal ranges will be 1:1 and that of maximum height will be 1:3.

Q24 Find the following in oblique projectile: - Trajectory, Time of Flight, Maximum Range

Q25.Derive an expression for the work done during the adiabatic expansion of an ideal gas?

Long answer type questions (5 marks each)

Q26. A displacement wave is represented by y = 0.25×10^{-3} Sin (500t + 0.025 Hz). Where y, t and z are in cm,sec and m respectively. Deduce (i) the direction of travel of the wave. (ii) Wave frequency (iii) wavelength (IV) the wave speed (v) maximum particle velocity

Q27 (a) What is Doppler Effect? A whistle is being rotated in a horizontal circle. What will be the effect on the sound frequency for a listener standing (i) outside the circle (ii) at the centre of the circle?
What is the beat frequency when two tuning forks of frequency 200 Hz and 205 Hz are sounded together? Mention one application of beats.

Q28 Define angle of contact. For what nature of angle of contact will a liquid wet the solid? A liquid drop of diameter 4 mm breaks into 1000 droplets of equal size. Calculate the resultant change in surface energy if the surface tension of the liquid is 0.07 N/m.

Q29(a) Derive an expression showing that in uniform circular motion, $= \frac{v^2}{r}$.
(b) Two parallel rail tracks run north-south. Train A moves north with a speed of 54 km/hr and a train B moves south with a speed of 90 km/hr. What is the (i) relative velocity of B w.r.t A, (ii) relative velocity of ground w.r.t B, (iii) velocity of a monkey running of the roof of the train A against the motion with a velocity of 18 km/hr w.r.t. train A as observed by a man standing on the ground .

Q30   (a) Explain Law of conservation of Linear Momentum. Explain (i) recoiling of gun, (ii) why gun is always held tightly to shoulder while firing.
    (b) A shell of mass 0.02 kg is fired by a gun of mass 100 kg. If the muzzle speed of the shell is 80 m/s , what is the recoil speed of gun ?