**Pratice Paper1**

**Class – XI**

**Subject – Physics**

**Time: 3 Hrs MM: 70**

**General Instructions:**

All questions are compulsory.

There are 26 questions in total. Questions 1 to 5 carry 1 mark each, questions 6 to 10 carry 2 marks each, question11to 22 carry 3 marks each and question 23 carry 4 marks, questions 24 to 26 carry 5 marks each.

There is no overall choice.

Use of calculators is not permitted.

You may use the following physical constants wherever necessary.

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. You may use the following values of physical constants wherever necessary:

c = 3 x 108 ms–1

h = 6.626 x 10–34 Js

e = 1.602 x 10–19 C

μ0 = 4 π x 10–7 T m A–1

Mass of neutron mn ≅ 1.675 x 10–27 kg

Boltzmann’s constant k = 1.381 x 10–23 J K–1

Avogadro’s number NA = 6.022 x 1023 / mol –1

1. Will the momentum remain constant if some external force acts on the system?

2. The Earth moving round the Sun in a circular orbit is acted upon by a force, and hence work must be done on the Earth by this force. Do you agree with this statement?

3. Why does a cricket player lower his hands while catching a ball?

4. Why do small bubbles have excess of pressure?

5.Along which axis M.O.I. is minimum?

6. A body of mass 5 kg is acted upon by two perpendicular forces of magnitude 8 N and 6 N. Find the magnitude and direction of the acceleration.

7. A ball is dropped vertically from rest at a height of 12 m. After striking the ground, it bounces to a height of 9 m. What fraction of kinetic energy does it loose on striking the ground?

8. If the angular momentum is conserved in a system whose moment of inertia is decreased. Will its rotational kinetic energy be also conserved?

9.State Kepler laws of planetry motion. OR

The change in the value of *g* at a height *h* above the Earth is same as at a depth *d* below it. If *h* and *d* are compared to the radius of the earth. What is the relation between h and d?

10. (i) Distinguish between an isothermal and an adiabatic process.

(ii) Distinguish between an isochoric and isobaric processes.

11.. It is easier to pull a lawn roller than to push it. Explain using the resolution of forces.

12.. Two billiard balls, each of mass 0.05 kg moving in opposite directions with speed 6*ms*1 collide and rebound with the same velocity. What is the impulse imparted to each ball due to the other?

13. Prove that the impulse received during an impact is equal to the total change in momentum produced during the impact.

14. Oil spreads over the surface of water, whereas water does not spread over the surface of oil. Why?

Q15. Define SHM. Under what conditions is the motion of a pendulum simple harmonic?

Q16. A particle is executing SHM. What fraction of its energy is kinetic

when the displacement is half the amplitude?

Q17. Find the potential energy of a system of four identical particles placed at the vertices of a square of side a. Also obtain the potential at the centre of the square.

Q18. State the main features of kinetic theory of an ideal gas.

Q19. State the secondlaw of thermodynamics. Establish the relation between CP and CV.

Q20. What is absolute error? The temperature of two bodies measured by a thermometer are t1 = 20°C ± 0.5°C and t2 = 50°C ± 0.5°C. What is the temperature difference and the error therein?

Q21. Distinguish between damped and forced oscillations. What do you mean by resonant oscillations?

Q22.What is projectile? What is the maximum height reached by an oblique projectile if its time of flight is T?

Q23.Two boys A and B jumped from height A fell on cemented floor and B on heap of sand.Satish was watching both of them and helped them.

i)Who injured more and Why?

ii)What values are shown by Satish?

Q24. The displacement of a body is given to be proportional to the cube of time elapsed. What is the nature of the acceleration of the body? Justify your answer.

A car accelerates from rest at a constant rate of for some time;

after which it decelerates at constant rate of to come to rest. If

the total time elapsed is T second.

(a) Draw a velocity time graph for the motion.

(b) Calculate maximum velocity attained in terms of , and T.

OR

(a) From the top of a building a ball is dropped while another is projected horizontally at the same time.

(i) Which ball will strike the ground first?

(ii) Which will strike the ground with more speed? Justify your answer in each case.

(b) A body is projected with speed u at an angle to the horizontal to have maximum range. What is the velocity at the highest point?

(c) What is the angle of projection of a projectile motion whose

range R is n times the maximum height.

Q25. Explain the Magnus effect with respect to the motion of a moving ball. What do you understand by ‘viscosity’? Give its dimensions and SI unit. On what factors does the coefficient of viscosity of a liquid depend?

OR

State Stoke’s law for the viscous drag experienced by the spherical body falling through a viscous liquid. Why does a spherical body achieve terminal speed? On what factors does the terminal speed depend? Give one example each of motion around us with (i) Positive (ii) Negative terminal velocity.

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

OR

(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.

(b) What is the beat frequency when two tuning forks of frequency 200 Hz and 205 Hz are sounded together? Mention one application of beats. 5