

Kendriya Vidyalaya Sitapur

1ST PERIODIC TEST (2019-20)

CLASS 11

SUB.-PHYSICS

Time- 1.5 hours

M.M.-50

General Instructions-

- (i) All questions are compulsory. However internal choice is given in some questions.
(ii) Question no. 1 to 10 are multiple choice type questions of one mark each.
Question no. 11 to 15 are two marks questions. Question no. 16 to 20 are three marks questions and Question no. 21 to 23 are five marks questions.

Q.1 Sir C.V. Raman got the Nobel prize for his experiment on

- (a) Dispersion of light (b) Reflection of light
(c) Refraction of light (d) Scattering of light

Q.2 Electron was discovered by

- (a) Chadwick (b) J.J. Thomson
(c) Maxwell (d) Goldstein

Q.3 What are the dimensions of gravitational constant

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

Q.4 Which set of physical quantities have same dimensions

- (a) Force and pressure (b) Work and torque
(c) Work and density (d) Pressure and power

Q.5 The number of significant figure in 2.000 m is

- (a) Three (b) One
(c) Two (d) Four

Q.6 The velocity of a particle is $v = v_0 + gt + ft^2$. If its position is $x=0$ at $t=0$ then its displacement at $t=1$ sec is

- (a) $v_0 + g/2 + f$ (b) $v_0 + 2g + 3f$
(c) $v_0 + g/2 + f/3$ (d) $v_0 + g + f$

Q.7 The displacement time graph of two particles A and B are straight lines inclined at an angle of 30° and 45° with the time axis. What is the ratio of velocities of A and B

- (a) $1:\sqrt{3}$ (b) $\sqrt{3}:1$
(c) $2:3$ (d) $3:2$

Q.8 What should be the angle between two vectors for their resultant to be minimum

- (a) 0° (b) 45°
(c) 90° (d) 180°

Q.9 What is the ratio of the maximum height attained by a projectile for two angles of projection 30° and 60° , keeping other parameters same

- (a) $1:\sqrt{3}$ (b) $\sqrt{3}:1$
(c) $1:3$ (d) $3:1$

Q.10 What is the dot product of two perpendicular vectors A and B

- (a) zero (b) 1

(c) A^2

(d) B^2

Q.11 Name the strongest force in the nature, its range and the objects among which it acts.

Q.12 Two measured resistances $R_1 = (100 \pm 3)$ ohm and $R_2 = (200 \pm 4)$ ohm are connected in series. What is the equivalent resistance with proper error limit.

Q.13 Check the correctness of the relation $s = ut + \frac{1}{2}at^2$, where u is the initial velocity, a is the constant acceleration and s is the distance travelled in time t .

Q.14 A student determines value of S from the formula $S = ab^2/c^3$, by measuring the physical quantities a, b and c . If the errors in the measurements of a, b and c are 1%, 2% and 3% respectively, then what will be the maximum permissible error in the value of S .

Q.15 The formula for a physical quantity A is $A = \frac{\sqrt{\text{pressure}}}{\sqrt{\text{density}}}$, then write the dimensions of A .

Q.16 Two bodies are thrown with same initial velocities at angles α and $(90^\circ - \alpha)$ with the horizontal. What will be the ratio of (i) Maximum heights attained by them and (ii) their horizontal ranges.

Q.17 Derive the first and second equation of motion by method of calculus.

Q.18 The displacement x of a particle varies with time t as

$x = 4t^2 - 15t + 25$. Find the position, velocity and acceleration of the particle at $t = 0$.

When will the velocity of the particle becomes zero.

Q.19 A body covers 12m in 2nd second and 20 m in 4th second. Find the values of acceleration and initial velocity.

Q. The centripetal force acting on a particle moving in circular orbit depends on its mass m , radius of the circle r and the speed of particle v . Obtain the formula for centripetal force using dimensional method.

Q.21 A projectile is fired horizontally with a velocity u . Show that its trajectory is a parabola. Also find expressions for its (i) time of flight, (b) horizontal range and (c) height attained.

OR

Two projectiles are thrown with different velocities and at different angles so as to cover the same maximum height. Show that the sum of the time taken by each to reach the highest point is equal to the total time taken by either of the projectile.

Q.22 (a) Define velocity and average speed.

(b) A body travels from A to B at 40 m/s and B to A at 60 m/s. Calculate average speed and average velocity.

Q.23 A planet moves around the sun in nearly circular orbit. Its period of revolution T depends on

(a) radius r of the orbit, (b) mass M of the sun And (iii) Gravitational constant G .

Show dimensionally that $T^2 \propto r^3$.

OR

(a) Describe parallax method for the determination of the distance of a star from the earth.

(b) Define (i) Absolute error (b) Relative error.