No. of Printed Pages/Questions:3/12

O.P.JINDAL SCHOOL, SAVITRI NAGAR
PERIODIC TEST –I (Round-1) **(2026-27)**

CLASS-XI **MAX.MARKS-20**

SUBJECT-PHYSICS **MAX.TIME-1 Hour**

General Instruction:-
(i)All questions are compulsory .There are 12 questions in this question paper with internal choice.
(ii) SECTION –A: Question numbers 1 to 5 are MCQs , and question number 6 is assertion and reason carrying 1 mark each.
(iii) SECTION –B: Question numbers 7 to 10 are short answer questions carrying 2 marks each.
(iv) SECTION –C: Question numbers 11 and 12 are long questions carrying 3marks each.
(v)There will be internal choices in some of the question of section B and section C.

SECTION A

Q1)The position of a particle is given by

$$x = t^3 - 6t^2 + 9t + 5$$

The particle is momentarily at rest at
A. $t = 1$s only B. $t = 3$s only
C. $t = 1$s and $t = 3$s D. Never

Q2) The displacement-time graph of a particle is x=4sin t
The velocity at $t = \frac{\pi}{2}$is
A. 4 m/s B. 0
C. –4 m/s D. 8 m/s

Q3) The angle between two vectors is $120°$. If their magnitudes are 8 and 6 units, the resultant is
A. 14 B. 10
C. 2 D. 7

Q4) A body thrown vertically upward crosses a point P after 2 s and again after 6 s.
Its maximum height is
A. 80 m B. 60 m
C. 40 m D. 20 m

Q5) A car covers the first half of a journey at speed 30 km/hand the second half at 60 km/h.
Its average speed is
A. 40 km/h B. 45 km/h
C. 48 km/h D. 50 km/h

Q6) **Assertion–Reason**
Assertion:
A body may have zero velocity but non-zero acceleration in motion in straight line.
Reason:
Whenever velocity is zero, acceleration must also be zero.
Choose the correct option.
A. Both A and R are true, and R is the correct explanation of A.
B. Both A and R are true, but R is not the correct explanation.
C. A is true but R is false.
D. A is false but R is true.

SECTION B

Q7. The displacement of a particle is

$$x = 3t^3 - 12t^2 + 9t + 1$$

Find
(i) velocity at $t = 2$s
(ii) acceleration at $t = 2$s

OR

Let $|A_1| = 3$, $|A_2| = 5$ and $|A_1 + A_2| = 5$.Find the value of dot product $(2A_1 + 3A_2) \cdot (3A_1 - 2A_2)$

Q8. There are 2 vectors A and B. if the resultant of sum of two vectors is equal to resultant of difference of 2 vectors find the angle between them.

OR

If two vectors P = i + 2mj + mk and Q = 4i - 2j + mk are perpendicular to each other. Find m .

Q9. A stone is dropped from a balloon rising vertically upward with velocity 20m/s If the stone reaches the ground after 5 s, find the height of the balloon when released.

OR

A body is thrown vertically upward with speed 20 m/s. Neglect air resistance and take $g = 10$ m/s^2. Find i)maximum height reached ii) velocity when it travels 10 m from starting point.

Q10. The displacement of a particle is

$$x = t^3 - 6t^2 + 9t.$$

Find
(i) the time when the particle is nearest to the origin after the motion has started.
(ii) the minimum velocity of particle.

OR

If the distance travelled by a body in the nth second is given by (4 + 6n) meter , then find initial velocity and acceleration of the body.

SECTION C

Q11.Attempt either (A) or (B) :

(A):

The position of a particle is

$$x = t^4 - 8t^3 + 18t^2 + 2$$

Find
(i) velocity function
(ii) acceleration function
(iii) all instants when acceleration becomes zero.

OR

(B):

Derive $v^2 - u^2 = 2as$ using the calculus method

Q12. A body starts from rest. During the first half of the distance it moves with acceleration 2 m/s² and during the remaining half with acceleration 6 m/s². Find the velocity at the end if the total distance is 64m.

OR

A ball is thrown vertically upward from the ground with a speed of 30 m/s.
Using $g = 10\ \text{m/s}^2$, calculate
(i) maximum height reached
(ii) The time difference when it passes a point P which is 20 m below the highest point.

Bisli Roy.