NEET : CHAPTER WISE TEST-3

SUBJECT :- PHYSICS **DATE.....**
CLASS :- 11th **NAME.....**
CHAPTER :- KINEMATICS **SECTION.....**

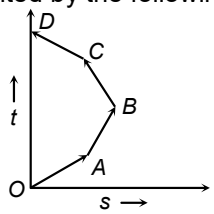
(SECTION-A)

1. An athlete completes one round of a circular track of radius *R* in 40 *sec*. What will be his displacement at the end of 2 min. 20 *sec*
(A) Zero (B) 2*R*
(C) $2\pi R$ (D) $7\pi R$

2. A person travels along a straight road for half the distance with velocity v_1 and the remaining half distance with velocity v_2 The average velocity is given by
(A) $v_1 v_2$ (B) $\frac{v_2^2}{v_1^2}$
(C) $\frac{v_1 + v_2}{2}$ (D) $\frac{2v_1 v_2}{v_1 + v_2}$

3. The displacement-time graph for two particles *A* and *B* are straight lines inclined at angles of 30^o and 60^o with the time axis. The ratio of velocities of $V_A : V_B$ is
(A) 1:2 (B) $1:\sqrt{3}$
(C) $\sqrt{3}:1$ (D) 1:3

4. Which of the following options is correct for the object having a straight line motion represented by the following graph



(A) 3The object moves with constantly increasing velocity from *O* to A and then it moves with constant velocity.
(B) Velocity of the object increases uniformly
(C) Average velocity is zero
(D) The graph shown is impossible

5. The displacement x of a particle along a straight line at time t is given by $x = a_0 + a_1 t + a_2 t^2$. The acceleration of the particle is
(A) a_0 (B) a_1 (C) $2a_2$ (D) a_2

6. The initial velocity of a body moving along a straight line is 7 m/s. It has a uniform acceleration of $4 m/s^2$. The distance covered by the body in the 5^{th} second of its motion is
(A) 25 m (B) 35 m
(C) 50 m (D) 85 m

7. A car moving with a speed of 40 km/h can be stopped by applying brakes after atleast 2 m. If the same car is moving with a speed of 80 km/h, what is the minimum stopping distance
(A) 8 m (B) 2 m
(C) 4 m (D) 6 m

8. A body starts from rest. What is the ratio of the distance travelled by the body during the 4th and 3rd second
(A) $\frac{7}{5}$ (B) $\frac{5}{7}$ (C) $\frac{7}{3}$ (D) $\frac{3}{7}$

9. If a car at rest accelerates uniformly to a speed of 144 *km/h* in 20 *s*. Then it covers a distance of
(A) 20 m (B) 400 m
(C) 1440 m (D) 2880 m

10. Equation of displacement for any particle is $s = 3t^3 + 7t^2 + 14t + 8m$. Its acceleration at time $t = 1$ sec is
(A) 10 m/s^2 (B) 16 m/s^2
(C) 25 m/s^2 (D) 32 m/s^2

11. A particle moves along X-axis in such a way that its coordinate X varies with time t according to the equation $x = (2 - 5t + 6t^2)m$. The initial velocity of the particle is
(A) $-5\, m/s$ (B) $6\, m/s$
(C) $-3\, m/s$ (D) $3\, m/s$

12. A train of 150 *meter* length is going towards north direction at a speed of $10 m/\sec$. A parrot flies at the speed of $5\ m/\sec$ towards south direction parallel to the railway track. The time taken by the parrot to cross the train is
(A) 12 *sec* (B) 8 *sec*
(C) 15 *sec* (D) 10 *sec*

13. Two bodies of different masses m_a and m_b are dropped from two different heights a and b. The ratio of the time taken by the two to cover these distances are
(A) $a : b$ (B) $b : a$
(C) $\sqrt{a} : \sqrt{b}$ (D) $a^2 : b^2$

14. A stone dropped from the top of the tower touches the ground in 4 sec. The height of the tower is about
(A) $80\, m$ (B) $40\, m$
(C) $20\ m$ (D) $160\ m$

15. Two stones of different masses are dropped simultaneously from the top of a building
(A) Smaller stone hit the ground earlier
(B) Larger stone hit the ground earlier
(C) Both stones reach the ground simultaneously
(D) Which of the stones reach the ground earlier depends on the composition of the stone

16. Water drops fall at regular intervals from a tap which is $5\ m$ above the ground. The third drop is leaving the tap at the instant the first drop touches the ground. How far above the ground is the second drop at that instant
(A) 2.50 *m* (B) 3.75 *m*
(C) 4.00 *m* (D) 1.25 *m*

17. A body starts to fall freely under gravity. The distances covered by it in first, second and third *second* are in ratio
(A) $1:3:5$ (B) $1:2:3$
(C) $1:4:9$ (D) $1:5:6$

18. A ball of mass m_1 and another ball of mass m_2 are dropped from equal height. If time taken by the balls are t_1 and t_2 respectively, then
(A) $t_1 = \frac{t_2}{2}$ (B) $t_1 = t_2$
(C) $t_1 = 4t_2$ (D) $t_1 = \frac{t_2}{4}$

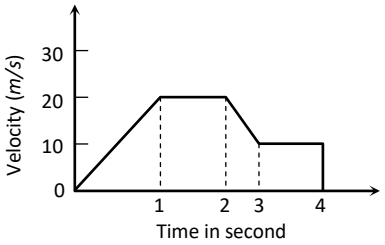
19. Time taken by an object falling from rest to cover the height of h_1 and h_2 is respectively t_1 and t_2 then the ratio of t_1 to t_2 is
(A) $h_1 : h_2$ (B) $\sqrt{h_1} : \sqrt{h_2}$
(C) $h_1 : 2h_2$ (D) $2h_1 : h_2$

20. A particle is thrown vertically upwards. If its velocity at half of the maximum height is 10 *m/s*, then maximum height attained by it is (Take $g = 10\ m/s^2$)
(A) 8 *m* (B) 10 *m*
(C) 12 *m* (D) 16 *m*

21. Three different objects of masses m_1, m_2 and m_3 are allowed to fall from rest and from the same point '*O*' along three different frictionless paths. The speeds of the three objects, on reaching the ground, will be in the ratio of
(A) $m_1 : m_2 : m_3$
(B) $m_1 : 2m_2 : 3m_3$
(C) 1 : 1 : 1
(D) $\frac{1}{m_1} : \frac{1}{m_2} : \frac{1}{m_3}$

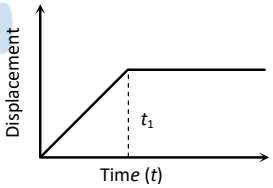
22. The position x of a particle varies with time t as $x = at^2 - bt^3$. The acceleration of the particle will be zero at time t equal to
(A) $\frac{a}{b}$ (B) $\frac{2a}{3b}$
(C) $\frac{a}{3b}$ (D) Zero

23. The variation of velocity of a particle with time moving along a straight line is illustrated in the following figure. The distance travelled by the particle in four seconds is



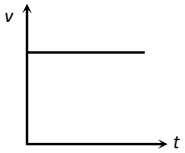
(A) 60 m (B) 55 m
(C) 25 m (D) 30 m

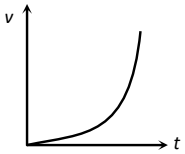
24. The $x - t$ graph shown in figure represents

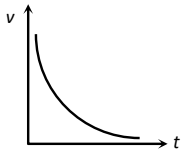


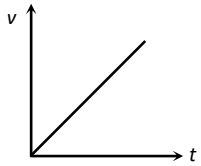
(A) Constant velocity
(B) Velocity of the body is continuously changing
(C) Instantaneous velocity
(D) The body travels with constant speed upto time t_1 and then stops

25. Which of the following velocity-time graphs represent uniform motion

(A)


(B)


(C)


(D)


26. Assertion : Rocket in flight is not an illustration of projectile.
Reason : Rocket takes flight due to combustion of fuel and does not move under the gravity effect alone.
(A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
(C) If assertion is true but reason is false.
(D) If the assertion and reason both are false.

27. A stone is just released from the window of a train moving along a horizontal straight track. The stone will hit the ground following
(A) Straight path
(B) Circular path
(C) Parabolic path
(D) Hyperbolic path

28. An aeroplane flying 490 *m* above ground level at 100 *m/s*, releases a block. How far on ground will it strike
(A) 0.1 *km* (B) 1 *km*
(C) 2 *km* (D) None

29. A particle (*A*) is dropped from a height and another particle (*B*) is thrown in horizontal direction with speed of 5 *m/sec* from the same height. The correct statement is
(A) Both particles will reach at ground simultaneously
(B) Both particles will reach at ground with same speed
(C) Particle (*A*) will reach at ground first with respect to particle (*B*)
(D) Particle (*B*) will reach at ground first with respect to particle (*A*)

30. A particle moves in a plane with constant acceleration in a direction different from the initial velocity. The path of the particle will be
(A) A straight line
(B) An arc of a circle
(C) A parabola
(D) An ellipse

31. A projectile fired with initial velocity u at some angle θ has a range R. If the initial velocity be doubled at the same angle of projection, then the range will be
(A) $2R$ (B) $R/2$ (C) R (D) $4R$

32. In the motion of a projectile freely under gravity, its
(A) Total energy is conserved
(B) Momentum is conserved
(C) Energy and momentum both are conserved
(D) None is conserved

33. The range of a projectile for a given initial velocity is maximum when the angle of projection is 45^o. The range will be minimum, if the angle of projection is
(A) 90^o (B) 180^o
(C) 60^o (D) 75^o

34. A ball thrown by one player reaches the other in 2 *sec*. the maximum height attained by the ball above the point of projection will be about
(A) 10 *m* (B) 7.5 *m*
(C) 5 *m* (D) 2.5 *m*

35. The height y and the distance x along the horizontal plane of a projectile on a certain planet (with no surrounding atmosphere) are given by $y = (8t - 5t^2)$ *meter* and $x = 6t$ *meter*, where t is in second. The velocity with which the projectile is projected is
(A) 8 *m/sec*
(B) 6 *m/sec*
(C) 10 *m/sec*
(D) Not obtainable from the data

(SECTION-B)

36. A projectile thrown with a speed v at an angle θ has a range R on the surface of earth. For same v and θ, its range on the surface of moon will be
(A) $R/6$ (B) $6R$
(C) $R/36$ (D) $36R$

37. The greatest height to which a man can throw a stone is h. The greatest distance to which he can throw it, will be
(A) $\frac{h}{2}$ (B) h (C) $2h$ (D) $3h$

38. The horizontal range is four times the maximum height attained by a projectile. The angle of projection is
(A) 90^o (B) 60^o
(C) 45^o (D) 30^o

39. For a projectile, the ratio of maximum height reached to the square of flight time is (g = 10 ms^{-2})
(A) 5 : 4 (B) 5 : 2
(C) 5 : 1 (D) 10 : 1

40. When a body is thrown with a velocity u making an angle θ with the horizontal plane, the maximum distance covered by it in horizontal direction is
(A) $\frac{u^2 \sin\theta}{g}$ (B) $\frac{u^2 \sin 2\theta}{2g}$
(C) $\frac{u^2 \sin 2\theta}{g}$ (D) $\frac{u^2 \cos 2\theta}{g}$

41. Two bodies are projected with the same velocity. If one is projected at an angle of 30^o and the other at an angle of 60^o to the horizontal, the ratio of the maximum heights reached is
(A) 3 : 1 (B) 1 : 3
(C) 1 : 2 (D) 2 : 1

42. If time of flight of a projectile is 10 seconds. Range is 500 *meters*. The maximum height attained by it will be
(A) 125 *m* (B) 50 *m*
(C) 100 *m* (D) 150 *m*

43. If a body *A* of mass *M* is thrown with velocity *V* at an angle of 30^o to the horizontal and another body *B* of the same mass is thrown with the same speed at an angle of 60^o to the horizontal. The ratio of horizontal range of *A* to *B* will be
(A) 1 : 3 (B) 1 : 1
(C) $1:\sqrt{3}$ (D) $\sqrt{3}:1$

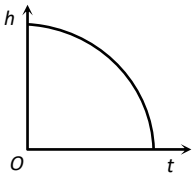
44. Which of the following sets of factors will affect the horizontal distance covered by an athlete in a long–jump event
(A) Speed before he jumps and his weight
(B) The direction in which he leaps and the initial speed
(C) The force with which he pushes the ground and his speed
(D) None of these

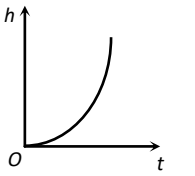
45. In a projectile motion, velocity at maximum height is
(A) $\frac{u\cos\theta}{2}$ (B) $u\cos\theta$
(C) $\frac{u\sin\theta}{2}$ (D) None of these

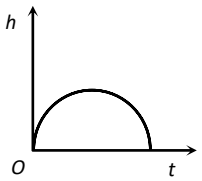
46. If two bodies are projected at 30° and 60° respectively, with the same velocity, then
(A) Their ranges are same
(B) Their heights are same
(C) Their times of flight are same
(D) All of these

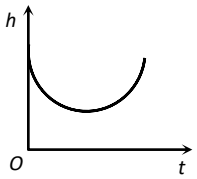
47. One car moving on a straight road covers one third of the distance with 20 *km/hr* and the rest with 60 *km/hr.* The average speed is
(A) 40 *km/hr* (B) 80 *km/hr*
(C) $46\frac{2}{3}$ *km/hr* (D) 36 *km/hr*

48. Which of the following is the graph between the height (*h*) of a projectile and time (*t*), when it is projected from the ground

(A) 

(B) 

(C) 

(D) 

49. **Assertion :** The maximum horizontal range of projectile is proportional to square of velocity.
Reason : The maximum horizontal range of projectile is equal to maximum height attained by projectile.
(A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
(C) If assertion is true but reason is false.
(D) If the assertion and reason both are false.

50. Match column I with column II.

Column I (Physical quantity)		**Column II (Fermula)**	
(A)	Instantaneous velocity v =	(p)	$\frac{\Delta x}{\Delta t}$
(B)	Average velocity, $\vec{v}$ =	(q)	$\lim_{\Delta t\to 0}\frac{\Delta v}{\Delta t}$
(C)	Instantaneous acceleration, a =	(r)	$\frac{\Delta v}{\Delta t}$
(D)	Average acceleration, $\vec{a}$	(s)	$\lim_{\Delta t\to 0}\frac{\Delta x}{\Delta t}$

(A) A – p, B – q, C – r, D – s
(B) A – r, B – s, C – p, D – q
(C) A – s, B – p, C – q, D – r
(D) A – q, B – r, C – s, D – p