QB365 Question Bank Software Study Materials

Kinematics 50 Important 1 Marks Questions With Answers (Book Back and Creative)

11th Standard
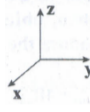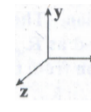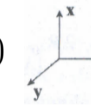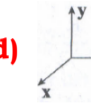
Physics

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

1) Which one of the following Cartesian coordinate systems is not followed in physics?

(a)   (b)   (c)   **(d)**

2) Identify the unit vector in the following?

(a) $\hat{i} + \hat{j}$ (b) $\frac{\hat{i}}{\sqrt{2}}$ (c) $\hat{k} - \frac{\hat{j}}{\sqrt{2}}$ **(d)** $\frac{\hat{i}+\hat{j}}{\sqrt{2}}$

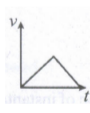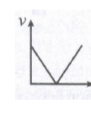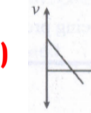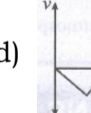3) Which one of the following physical quantities cannot be represented by a scalar?

(a) Mass   (b) length   **(c) momentum**   (d) magnitude of acceleration

4) Two objects of masses m_1 and m_2 fall from the heights h_1 and h_2 respectively. The ratio of the magnitude of their momenta when they hit the ground is

(a) $\sqrt{\frac{h_1}{h_2}}$ (b) $\sqrt{\frac{m_1 h_1}{m_2 h_2}}$ **(c)** $\frac{m_1}{m_2}\sqrt{\frac{h_1}{h_2}}$ (d) $\frac{m_1}{m_2}$

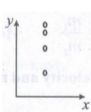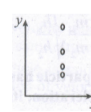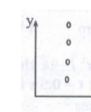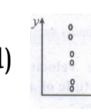5) If a particle has negative velocity and negative acceleration, its speed

(a) increases   (b) decreases   (c) remains same   (d) zero

6) If the velocity is $\vec{v} = 2\hat{i} + t^2\hat{j} - 9\vec{k}$, then the magnitude of acceleration at t = 0.5s is

(a) 1 ms^{-2}   (b) 2 ms^{-2} (c) zero   (d) -1 ms^{-2}

7) If an object is dropped from the top of a building and it reaches the ground at t = 4 s, then the height of the building is (ignoring air resistance) (g = 9.8 ms^{-2})

(a) 77.3 m   **(b) 78.4 m**   (c) 80.5 m   (d) 79.2 m

8) A ball is projected vertically upwards with a velocity v. It comes back to ground in time t. Which v-t graph shows the motion correctly?

(a)   (b)   **(c)**   (d)

9) If one object is dropped vertically downward and another object is thrown horizontally from the same height, then the ratio of vertical distance covered by both objects at any instant t is

(a) 1   (b) 2   (c) 4   (d) 0.5

10) A ball is dropped from some height towards the ground. Which one of the following represents the correct motion of the ball?

(a)   (b)   (c)   (d)

11) If a particle executes uniform circular motion in the xy plane in clock wise direction, then the angular velocity is in

(a) +y direction   (b) +z direction   **(c) -z direction**   (d) -x direction

12) If a particle executes uniform circular motion, choose the correct statement

(a) The velocity and speed are constant   (b) The acceleration and speed are constant.

(c) The velocity and acceleration are constant.   **(d) The speed and magnitude of acceleration are constant.**

13) If an object is thrown vertically up with the initial speed u from the ground, then the time taken by the object to return back to ground is

(a) $\frac{u^2}{2g}$ (b) $\frac{u^2}{g}$ (c) $\frac{u}{2g}$ **(d) $\frac{2u}{g}$**

14) Two objects are projected at angles 30° and 60° respectively with respect to the horizontal direction. The range of two objects are denoted as $R_{30°}$ and $R_{30°}$. Choose the correct relation from the following

(a) $R_{30°} = R_{60°}$ (b) $R_{30°} = 4R_{60°}$ (c) $R_{30°} = \frac{R_{60°}}{2}$ (d) $R_{30°} = 2R_{60°}$

15) An object is dropped in an unknown planet from height 50 m, it reaches the ground in 2 s. The acceleration due to gravity in this unknown planet is

(a) g = 20 ms^{-2} **(b) g = 25 ms^{-2}**   (c) g = 15 ms^{-2} (d) g = 30 ms^{-2}

16) The velocity of a particle at an instant t is 10 m/s. After 5 s the velocity is 20 m/s. The velocity, 3 seconds earlier was _____

(a) 2 m/s   (b) 3 m/s   **(c) 4 m/s**   (d) 5 m/s

17) If for two vectors $\bar{A}, \bar{B}$ $\bar{A} \times \bar{B} = 0$ then the vectors are _____

(a) perpendicular to each other   **(b) parallel to each other**   (c) act at an angle 60°   (d) act at an angle 30°

18) The expression for time of flight of a projectile is t_f = _____

(a) $\frac{\sin\theta}{g}$ (b) $\frac{u\sin\theta}{g}$ (c) $\frac{u\sin\theta}{2g}$ **(d) $\frac{2u\sin\theta}{2g}$**

19) Given $\vec{A} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{B} = 6\hat{i} + 9\hat{j} + 3\hat{k}$ which of the following statements is correct?

(a) $\vec{A}$ and $\vec{B}$ are equal vectors   **(b) $\vec{A}$ and $\vec{B}$ are parallel vectors**   (c) $\vec{A}$ and $\vec{B}$ are perpendicular vectors
(d) None of these

20) A vector having unit magnitude is called_____vector.

(a) like   (b) unlike   (c) orthogonal   **(d) unit**

21) What is the angle between $\hat{i} + \hat{j} + \hat{k}$ and $\hat{j}$?

(a) 0°   (b) 45º   (c) 60°   **(d) none of these**

22) The angle between two vectors $2\hat{i} + 3\hat{j} + \hat{k}$ and $-3\hat{i} + 6\hat{k}$ is:

(a) 0°   (b) 45º   (c) 60°   **(d) 90°**

23) Which of the following changes when a particle is moving with uniform velocity?

(a) speed   (b) velocity   (c) acceleration   **(d) position vector**

24) An object accelerates from rest at a constant rate 'a' for some time and afterwards, it decelerates at a constant, rate 'b' to come to rest If the total time elapsed is 't', the maximum velocity acquired by the object is _____.

(a) $\frac{abt}{(a+b)}$ (b) $\frac{(a+b)t}{ab}$ (c) $\frac{t}{(a+b)}$ (d) $(a+b)t$

25) The sum of the magnitudes of two forces acting at a point is 18 and their resultant has magnitude 12. If the resultant is at right angles to the smaller force, the magnitudes of the forces are _____

(a) 12,6   (b) 14,4   (c) 13,5   **(d) 11,7**

26) The position x of a particle with respect to time t along x-axis is given by x = 9t^2 + t^3 where x is in metres and t in seconds. What will be the position of this particle when it achieves maximum speed along the +x direction?

(a) 54m   (b) 81m   (c) 24m   (d) 32m

27) The displacement x of a particle varies with time t as x = ae$^{\alpha t}$ + be$^{\beta t}$, where a, b, α and β are positive constants. The velocity of the particle will _____.

(a) be independent of β (b) drop to zero when α = β (c) go on decreasing with time   **(d) go on increasing with time**
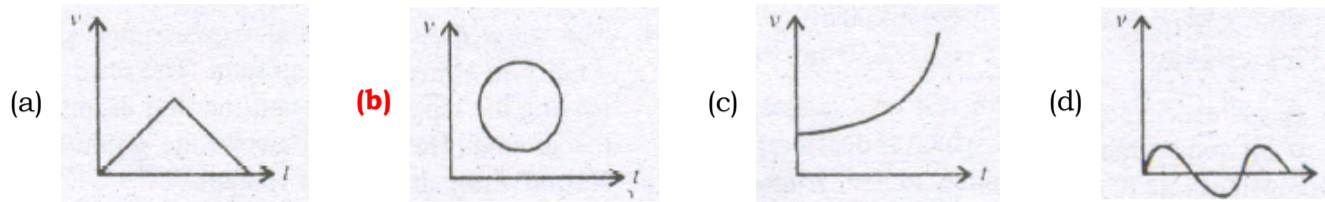
28) A particle is thrown vertically upward. Its velocity at half of the height is 10 m/s, then the maximum height attained by it _____ (g = 10 m/s^2)

(a) 8m   (b) 6m   **(c) 10m**   (d) 16m

29) The position x of a particle varies with time, (t) as x == at^2 - bt^3. The acceleration will be zero at time t is equal to _____.

(a) $\frac{a}{3b}$ (b) Zero   (c) $\frac{2a}{3b}$ (d) $\frac{a}{b}$

30) Which of the following curve does not represent motion in one dimension?

(a)   **(b)**   (c)   (d)

31) If an object executes a to and fro motion about a fixed point, is an example for _____.

(a) rotational motion   **(b) vibratory motion**   (c) circular motion   (d) curvilinear motion

32) Example for scalar is _____.

(a) distance   (b) displacement   (c) velocity   (d) angular momentum

33) The angle between two collinear vectors is/are _____.

(a) 0º   (b) 90º   (c) 180º   **(d) 0º (or) 180º**

34) A force of 3N and 4N are acting perpendicular to an object, the resultant force is _____.

(a) 9N   (b) 16N   **(c) 5N**   (d) 7N

35) Torque is a _____.

(a) scalar   **(b) vector**   (c) either scalar (or) vector   (d) none

36) If $\vec{p} = m\vec{V}$ then the direction of $\vec{P}$ along _____.

(a) m   **(b) v**   (c) both (a) and (b)   (d) neither m nor v

37) $|\vec{A} \times \vec{B}|$ is equal to _____

(a) $-|\vec{A} \times \vec{B}|$ **(b) $|\vec{B} \times \vec{A}|$**   (c) $-|\vec{B} \times \vec{A}|$ (d) $\frac{\vec{A} \times \vec{B}}{|\vec{A} \times \vec{B}|}$

38) Which of the following cannot be a resultant of two vectors of magnitude 3 and 6?

(a) 3   (b) 6   **(c) 10**   (d) 7

39) The area under the force, time graph is _____.

(a) momentum   (b) force   (c) work done   **(d) impulse**

40) The unit of momentum is _____.

(a) kg m s^{-1} **(b) kg m^2 s^{-2}**   (c) kg m^2 s^{-1} (d) kg^{-1} m^2 s^{-1}

41) For a particle, revolving in a circle with speed, the acceleration of the particle is _____.

(a) along the tangent   **(b) along the radius**   (c) along its circumference   (d) zero

42) _____ is scalar quantity

(a) work   (b) speed   **(c) temprature**   (d) none

43) If $|\vec{A} \times \vec{B}| = \sqrt{3}\vec{A} \cdot \vec{B}$, then the value of $\vec{A} + \vec{B}$ is

(a) $\left[A^2 + B^2 + \frac{AB}{\sqrt{3}} \right]^{\frac{1}{2}}$ (b) $A^2 + B^2$ (c) $\left(A^2 + B^2\sqrt{3}AB \right)^{\frac{1}{2}}$ **(d) $\left(A^2 + B^2 + AB \right)^{\frac{1}{3}}$**

44) A vector $\vec{A}$ points vertically upward and $\vec{B}$ points towards north. The vector product $\vec{A} \times \vec{B}$ is

(a) along west   (b) along east   (c) zero   (d) vertically downward
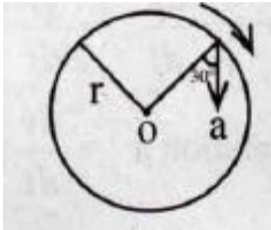
45) If a unit vector is represented by $0.5\hat{i} + 0.8\hat{j} - c\hat{k}$ the value of c is

(a) 1   **(b) $\sqrt{0.11}$**   (c) $\sqrt{0.01}$ (d) 0.39

46) $\vec{a} = 2\hat{i} + 3\hat{j} + \hat{k}$ and $\vec{b} = 3\hat{i} + 2\hat{j} + \hat{k}$ find the angle between them

(a) $\cos^{-1}\left(\frac{1}{14}\right)$ (b) $\cos^{-1}(0.14)$ (c) $\cos^{-1}\left(\frac{3}{2}\right)$ (d) $\cos^{-1}\left(\frac{1}{6}\right)$

47) In the given figure, a = 15 ms^{-2} represents the total acceleration of a particle moving in the clockwise direction in a circle of radius r = 2.5 m at a given instant of time. The speed of the particle is

(a) 5 ms^{-1} **(b) 5.7 ms^{-1}**   (c) 6.2 ms^{-1} (d) 4.5 ms^{-1}

48) If the displacement of a body is given by s = 2 - 5t + 6t^2 then its initial velocity is

(a) 10-m/s   (b) 5 m/s   (c) -10 m/s   **(d) -5 m/s**

49) If the area of parallelogram whose sides are denotes by $\vec{A}$ and $\vec{B}$ is $\frac{1}{2}|A||B|$ then the angle between $\vec{A}$ and $\vec{B}$ is _____.

(a) 30º   (b) 60º   (c) 90º   **(d) 45º**

50) A somersault performed by a person is an example for

(a) circular motion   **(b) rotational motion**   (c) linear motion   (d) vibratory motion