Yakeen NEET 2.0 2026

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DPP: 3

Motion in a Straight Line

Q1 An α-particle in a cyclotron changes its velocity from $30\ \mathrm{km/s}$ south to $40\ \mathrm{km/s}$ west in 10 second what is the magnitude of average acceleration during this time
(A) $5\mathrm{Km/s^2}$
(B) $7\mathrm{Km/s^2}$
(C) $9\mathrm{Km/s^2}$
(D) $11\mathrm{Km/s^2}$

Q2 The displacement of a particle is represented by the following equation $s = 3t^3 + 7t^2 + 5t + 8$ where s is in metres and t in seconds. The acceleration of the particle at $t = 1$ s is:
(A) $14\ \mathrm{m/s^2}$
(B) $18\ \mathrm{m/s^2}$
(C) $32\ \mathrm{m/s^2}$
(D) Zero

Q3 A body is moving according to the equation $x = at + bt^2 - ct^3$. Then its instantaneous speed is given by:
(A) $a + 2b + 3ct$
(B) $a + 2bt - 3ct^2$
(C) $2b - 6ct$
(D) None of these

Q4 The motion of a particle is described by the equation $x = a + bt^2$ where $a = 15$ cm and $b = 3\ \mathrm{cm/sec^2}$. Its instantaneous velocity at time 3sec will be
(A) $36\ \mathrm{cm/sec}$
(B) $18\ \mathrm{cm/sec}$
(C) $16\ \mathrm{cm/sec}$
(D) $32\ \mathrm{cm/sec}$

Q5 Starting from rest, the acceleration of a particle is $a = 2(t - 1)$. The velocity of the particle at $t = 5$ s is:
(A) $15\ \mathrm{m/s}$
(B) $25\ \mathrm{m/s}$
(C) $5\ \mathrm{m/s}$
(D) None of these

Q6 Which of the following relations representing displacement x of a particle describes motion with constant acceleration?
(A) $x = 6 - 7t^{-2}$
(B) $x = 3t^2 + 5t^3 + 7$
(C) $x = 9t^2 + 8$
(D) $x = 4t^{-2} + 3t^{-1}$

Q7 A particle is moving so that its displacement s is given as $s = t^3 - 6t^2 + 3t + 4$ meter. Its velocity at the instant when its acceleration is zero will be:
(A) $3\ \mathrm{m/s}$
(B) $-12\ \mathrm{m/s}$
(C) $42\ \mathrm{m/s}$
(D) $-9\ \mathrm{m/s}$

Q8 A particle starts moving along x-axis from $t = 0$, its position varying with time as $x = 2t^3 - 3t^2 + 1$. At which time instants is its velocity zero?
(A) $t = 0, 2$ s
(B) $t = 0, 3$ s
(C) $t = 0, 4$ s
(D) $t = 0, 1$ s

Q9 The velocity of a body depends on time according to the equation $v = 20 + 0.1t^2$. The body has
(A) Uniform acceleration
(B) Uniform retardation
(C) Non-uniform acceleration
(D) Zero acceleration

Q10

A car is moving with a velocity of $20\ \mathrm{m/s}$. The driver accelerated it for 10 seconds and reached a velocity of $40\ \mathrm{m/s}$. What is the average acceleration?

(A) $3\ \mathrm{m/s^2}$

(B) $2\ \mathrm{m/s^2}$

(C) $1\ \mathrm{m/s^2}$

(D) zero

Answer Key

Q1	(A)
Q2	(C)
Q3	(B)
Q4	(B)
Q5	(A)
Q6	(C)
Q7	(D)
Q8	(D)
Q9	(C)
Q10	(B)