Yakeen NEET 2.0 2026

Physics by MR Sir

Motion in a Plane

DPP: 6

Q1 A helicopter is flying south with a speed of 50kmh^{-1}. A train is moving with the same speed towards east. The relative velocity of the helicopter as seen by the passengers in the train will be towards.

(A) North east (B) South east
(C) North west (D) South west

Q2 A train is moving towards east and a car is along north, both with same speed. The observed direction of car to the passenger in the train is

(A) East-north direction.
(B) West-north direction
(C) South-east direction
(D) None of these

Q3 A man holding a flag is running in North-East direction with speed 10 m/s. Wind is blowing in east direction with speed $5\sqrt{2}$ m/s. Find the direction in which flag will flutter.

(A) East (B) North
(C) West (D) South

Q4 Rain is falling vertically downwards with a velocity of $3\ \text{km/hr}$. A man walks in the rain with a velocity of $4\ \text{km/hr}$. The raindrops will fall on the man with a velocity of

(A) $1\ \text{km/hr}$
(B) $3\ \text{km/hr}$
(C) $4\ \text{km/hr}$
(D) $5\ \text{km/hr}$

Q5 To a stationary man, rain appears to be falling at an angle 30° with the vertical. As he starts moving with a speed of $0.5\ \text{m/s}$ he finds that the rain is falling vertically. Then the speed of rain w.r.t. the moving man is:

(A) $0.5\ \text{m/s}$
(B) $1\ \text{m/s}$
(C) $0.5\sqrt{3}\ \text{m/s}$
(D) $\sqrt{3}\ \text{m/s}$

Q6 A man is going due east with a velocity of $5\ \text{ms}^{-1}$. It is vertically raining downwards with a velocity of $4\ \text{ms}^{-1}$. At what angle should he hold the umbrella to the vertical so as to protect himself from the rain?

(A) $\tan^{-1}\left(\frac{5}{4}\right)$ in anti-clockwise direction
(B) $\tan^{-1}\left(\frac{5}{4}\right)$ in clockwise direction
(C) $\tan^{-1}\left(\frac{4}{5}\right)$ North of East
(D) $\tan^{-1}\left(\frac{4}{5}\right)$ East of North

Q7 Rain drops are falling downward vertically at 4kmph. For a person moving forward at 3kmph feels the rain falling at

(A) 7 kmph (B) 1 kmph
(C) 5 kmph (D) 25 kmph

Q8 A boat takes 2 hours to go 8 km and come back in still water lake. The time taken for going 8 km upstream and coming back with water velocity of 4km/h is:

(A) 140 min (B) 150 min

(C) 160 min (D) 170 min

Q9 A person swims in a river aiming to reach exactly on the opposite point on the bank of a river. His speed of swimming is 0.5 m/s at an angle of 120° with the direction of flow of water. The speed of water is

(A) 1.0 m/s (B) 0.5 m/s
(C) 0.25 m/s (D) 0.43 m/s

Q10 A man can swim in still water with a speed of $2\ \mathrm{ms}^{-1}$. If he wants to cross a river of water with a current speed $\sqrt{3}\ \mathrm{ms}^{-1}$ along shortest possible path, then in which direction should he swim?

(A) At an angle 120° to the water current
(B) At an angle 150° to the water current
(C) At an angle 90° to the water current
(D) None of these

Q11 The motion of one projectile as seen from another will always be

(A) Straight line
(B) Parabolic
(C) Circular
(D) Hyperbolic

Q12 Two cars A and B are moving in same direction with velocities $30\ \mathrm{m/s}$ and $20\ \mathrm{m/s}$ respectively. When car A is at a distance d behind the car B, the driver of the car A applies brakes producing uniform retardation of $2\ \mathrm{m/s^2}$. There will be no collision when

(A) $d < 2.5\ \mathrm{m}$
(B) $d > 125\ \mathrm{m}$
(C) $d > 25\ \mathrm{m}$
(D) $d < 125\ \mathrm{m}$

Q13 Two trains each of length $100\ \mathrm{m}$ moving parallel towards each other at speed $72\ \mathrm{km/h}$ and $36\ \mathrm{km/h}$ respectively. In how much time will they cross each other?

(A) $4.5\ \mathrm{s}$
(B) $6.67\ \mathrm{s}$
(C) $3.5\ \mathrm{s}$
(D) $7.25\ \mathrm{s}$

Answer Key

Q1	(D)
Q2	(B)
Q3	(D)
Q4	(D)
Q5	(C)
Q6	(B)
Q7	(C)
Q8	(C)
Q9	(C)
Q10	(B)
Q11	(A)
Q12	(C)
Q13	(B)