

## Yakeen NEET 2.0 2026

## Physics by MR Sir

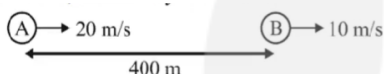
DPP: 3

## Motion in a Plane

**Q1** A train is moving towards East with a speed  $20 \text{ m/s}$ . A person is running on the roof of the train with a speed  $3 \text{ m/s}$  against the motion of train. Velocity of the person as seen by an observer on ground will be:

- (A)  $23 \text{ m/s}$  towards East
- (B)  $17 \text{ m/s}$  towards East
- (C)  $23 \text{ m/s}$  towards West
- (D)  $17 \text{ m/s}$  towards West

**Q2** Find time, when they will meet



- (A) 40sec
- (B) 20sec
- (C) 10sec
- (D) 25sec

**Q3** Find relative velocity of  $B$  w.r.t.  $A$



- (A)  $30 \text{ m/s}$
- (B)  $40 \text{ m/s}$
- (C)  $60 \text{ m/s}$
- (D)  $10 \text{ m/s}$

**Q4** Two trains each of length  $100 \text{ m}$  moving parallel towards each other at speed  $72 \text{ km/h}$  and  $36 \text{ km/h}$  respectively. In how much time will they cross each other?

- (A)  $4.5 \text{ s}$
- (B)  $6.67 \text{ s}$

- (C)  $3.5 \text{ s}$
- (D)  $7.25 \text{ s}$

**Q5** A train is moving in south with a speed of  $90 \text{ kmh}^{-1}$ . The velocity of ground with respect to the train is:

- (A)  $0 \text{ ms}^{-1}$
- (B)  $-25 \text{ ms}^{-1}$
- (C)  $25 \text{ ms}^{-1}$
- (D)  $-40 \text{ ms}^{-1}$

**Q6** A train is moving slowly on a straight track with a constant speed of  $2 \text{ ms}^{-1}$ . A passenger in that train starts walking at a steady speed of  $2 \text{ ms}^{-1}$  to the back of the train in the opposite direction of the motion of the train. So to an observer standing on the platform directly in front of that passenger, the velocity of the passenger appears to be

- (A)  $4 \text{ ms}^{-1}$
- (B)  $2 \text{ ms}^{-1}$
- (C)  $2 \text{ ms}^{-1}$  in the opposite direction of the train
- (D) Zero

**Q7** Two buses of length  $60 \text{ feet}$  and  $40 \text{ feet}$  are moving parallel towards each other at a speed  $15 \text{ feet/s}$  and  $10 \text{ feet/s}$  respectively. Time taken to pass each other is;

- (A)  $\frac{4}{5} \text{ s}$
- (B)  $4 \text{ s}$
- (C)  $8 \text{ s}$
- (D)  $20 \text{ s}$

**Q8**



A bus is moving with a speed of  $10 \text{ ms}^{-1}$  on a straight road. A scooterist wishes to overtake the bus in 100 s. If the bus is at a distance of 1 km from the scooterist, with what speed should the scooterist chase the bus?

- (A)  $40 \text{ ms}^{-1}$   
 (B)  $25 \text{ ms}^{-1}$   
 (C)  $10 \text{ ms}^{-1}$   
 (D)  $20 \text{ ms}^{-1}$

**Q9** A bus starts moving with acceleration  $2 \text{ m/s}^2$ . A cyclist 96 m behind the bus starts simultaneously towards the bus at 20 m/s. After what time will he be able to overtake the bus?

- (A) 4 sec                      (B) 8 sec  
 (C) 12 sec                    (D) 16 sec

**Q10** A man is 25 m behind a bus, when bus starts accelerating at  $2 \text{ ms}^{-2}$  and man starts moving with constant velocity of  $10 \text{ ms}^{-1}$ . Time taken by him to board the bus is

- (A) 2 sec                      (B) 3 sec  
 (C) 4 sec                      (D) 5 sec

**Q11** A student is standing at a distance of 50 metres from the bus. As soon as the bus begins its motion with an acceleration of  $1 \text{ ms}^{-2}$ , the student starts running towards the bus with a uniform velocity  $u$ . Assuming the motion to be along a straight road, the minimum value of  $u$ , so that the student is able to catch the bus is:

- (A)  $5 \text{ ms}^{-1}$   
 (B)  $8 \text{ ms}^{-1}$   
 (C)  $10 \text{ ms}^{-1}$   
 (D)  $12 \text{ ms}^{-1}$

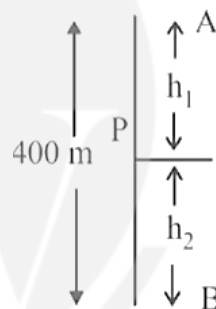
**Q12** Two cars A and B are at rest at same point initially. If A starts with uniform velocity of  $40 \text{ m/sec}$  and B starts in the same direction with constant acceleration of  $4 \text{ m/s}^2$ , then B will catch A after how much time ?

- (A) 10 sec  
 (B) 20 sec  
 (C) 30 sec  
 (D) 35 sec

**Q13** A bird is flying with a velocity of 40 kmph towards north. A train is moving east with a velocity of 40 kmph. What will be the magnitude of the bird's velocity as observed by a passenger sitting in the train?

- (A)  $10\sqrt{2} \text{ kmph}$               (B)  $10\sqrt{3} \text{ kmph}$   
 (C)  $40 \text{ kmph}$                     (D)  $40\sqrt{2} \text{ kmph}$

**Q14** A man drops a ball downside from the roof of a tower of height 400 meters. At the same time another ball is thrown upside with a velocity 50 meter/sec from the surface of the tower, then they will meet at what height from the surface of the tower ( $g = 10 \text{ m/s}^2$ )



- (A) 100 m                      (B) 320 m  
 (C) 80 m                        (D) 240 m

**Q15** The water drop falls at regular intervals from a tap 5 m above the ground. The third drop is leaving the tap at instant the first drop touches the ground. How far above the ground is the second drop at that instant?

- (A) 1.25 m  
 (B) 2.50 m  
 (C) 3.75 m  
 (D) 4.00 m



- Q16** A ball is dropped from a high rise platform at  $t = 0$  starting from rest. After 6 seconds another ball is thrown downwards from the same platform with a speed  $v$ . The two balls meet at  $t = 18$  s. What is the value of  $v$ ?

(Take  $g = 10 \text{ m/s}^2$ )

- (A) 75 m/s
- (B) 55 m/s
- (C) 40 m/s
- (D) 60 m/s

- Q17** From a building two balls A and B are thrown such that A is thrown upwards and B downwards (both vertically). If  $T_A$  and  $T_B$  are their respective time of flights then

- (A)  $T_A > T_B$
- (B)  $T_A = T_B$
- (C) their time of flights depend on their masses
- (D) None of these



## Answer Key

Q1 (B)

Q2 (A)

Q3 (A)

Q4 (B)

Q5 (B)

Q6 (D)

Q7 (B)

Q8 (D)

Q9 (B)

Q10 (D)

Q11 (C)

Q12 (B)

Q13 (D)

Q14 (C)

Q15 (C)

Q16 (A)

Q17 (A)



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