DPP - Daily Practice Problems

Name : Date :

Start Time : End Time :

PHYSICS 04

SYLLABUS : MOTION IN A STRAIGHT LINE 2 (Relative Motion & Motion Under Gravity)

Max. Marks : 112 **Time : 60 min.**

GENERAL INSTRUCTIONS

- The Daily Practice Problem Sheet contains 28 MCQ's. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.
- You have to evaluate your Response Grids yourself with the help of solution booklet.
- Each correct answer will get you 4 marks and 1 mark shall be deduced for each incorrect answer. No mark will be given/ deducted if no bubble is filled. Keep a timer in front of you and stop immediately at the end of 60 min.
- The sheet follows a particular syllabus. Do not attempt the sheet before you have completed your preparation for that syllabus. Refer syllabus sheet in the starting of the book for the syllabus of all the DPP sheets.
- After completing the sheet check your answers with the solution booklet and complete the Result Grid. Finally spend time to analyse your performance and revise the areas which emerge out as weak in your evaluation.

DIRECTIONS (Q.1-Q.19) : There are 19 multiple choice questions. Each question has 4 choices (a), (b), (c) and (d), out of which **ONLY ONE** choice is correct.

Q.1 A stone is dropped from a minar of height h and it reaches after t seconds on earth. From the same minar if two stones are thrown (one upwards and other downwards) with the same velocity u and they reach the earth surface after t_1 and t_2 seconds respectively, then

(a) $t = t_1 - t_2$ (b) $t = \frac{t_1 + t_2}{2}$

(c) $t = \sqrt{t_1 t_2}$ (d) $t = t_1^2 t_2^2$

Q.2 A ball is projected upwards from a height h above the surface of the earth with velocity v. The time at which the ball strikes the ground is

(a) $\frac{v}{g} + \frac{2hg}{\sqrt{2}}$ (b) $\frac{v}{g}\left[1 - \sqrt{1 + \frac{2h}{g}}\right]$

(c) $\frac{v}{g}\left[1 + \sqrt{1 + \frac{2gh}{v^2}}\right]$ (d) $\frac{v}{g}\left[1 + \sqrt{v^2 + \frac{2g}{h}}\right]$

Q.3 A man throws balls with the same speed vertically upwards, one after the other at an interval of 2 seconds. What should be the speed of the throw so that more than two balls are in the sky at any time? (Given g = 9.8 m/s^2)

(a) At least 0.8 m/s

(b) Any speed less than 19.6 m/s

(c) Only with speed 19.6 m/s

(d) More than 19.6 m/s

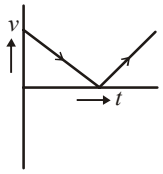
RESPONSE GRID 1. ⓐⓑⓒⓓ 2. ⓐⓑⓒⓓ 3. ⓐⓑⓒⓓ

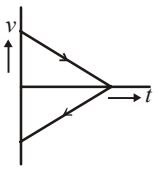
Space for Rough Work

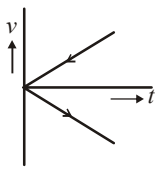
Q.4 If a ball is thrown vertically upwards with speed u, the distance covered during the last t second of its ascent is

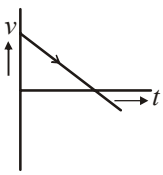
(a) $\frac{1}{2}gt^2$ (b) $ut-\frac{1}{2}gt^2$ (c) (u – gt)t (d) ut d

Q.5 A ball is thrown vertically upwards. Which of the following graphs represent velocity-time graph of the ball during its flight? (air resistance is neglected)

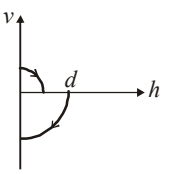
(a) 

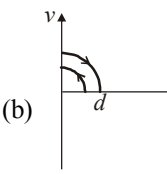
(b) 

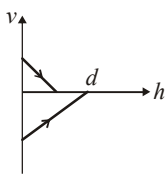
(c) 

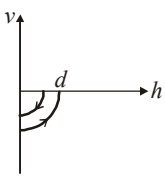
(d) 

Q.6 A ball is dropped vertically from a height d above the ground. It hits the ground and bounces up vertically to a height d/2. Neglecting subsequent motion and air resistance, its velocity v varies with the height h above the ground is

(a) 

(b) 

(c) 

(d) 

Q.7 P, Q and R are three balloons ascending with velocities U, 4U and 8U respectively. If stones of the same mass be dropped from each, when they are at the same height, then

(a) They reach the ground at the same time
(b) Stone from P reaches the ground first
(c) Stone from R reaches the ground first
(d) Stone from Q reaches the ground first

Q.8 A body is projected up with a speed 'u' and the time taken by it is T to reach the maximum height H. Pick out the correct statement

(a) It reaches $H/2$ in $T/2$ sec
(b) It acquires velocity $u/2$ in $T/2$ sec
(c) Its velocity is $u/2$ at $H/2$
(d) Same velocity at $2T$

Q.9 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) $2h_1 : h_2$

Q.10 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) $\frac{1}{m_1} : \frac{1}{m_2} : \frac{1}{m_3}$

Q.11 From the top of a tower, a particle is thrown vertically downwards with a velocity of 10 m/s. The ratio of the distances, covered by it in the 3rd and 2nd seconds of the motion is (Take g = 10m/s^2)

(a) 5 : 7 (b) 7 : 5 (c) 3 : 6 (d) 6 : 3

Q.12 A body falls from a height h = 200 m. The ratio of distance travelled in each 2 second during t = 0 to t = 6 second of the journey is

(a) 1 : 4 : 9 (b) 1 : 2 : 4
(c) 1 : 3 : 5 (d) 1 : 2 : 3

Q.13 The effective acceleration of a body, when thrown upwards with acceleration a will be :

(a) $\sqrt{a-g^2}$ (b) $\sqrt{a^2+g^2}$
(c) $(a-g)$ (d) $(a+g)$

Q.14 An aeroplane is moving with a velocity u. It drops a packet from a height h. The time t taken by the packet in reaching the ground will be

(a) $\sqrt{\left(\frac{2g}{h}\right)}$ (b) $\sqrt{\left(\frac{2u}{g}\right)}$ (c) $\sqrt{\left(\frac{h}{2g}\right)}$ (d) $\sqrt{\left(\frac{2h}{g}\right)}$

RESPONSE GRID					
	4. ⓐⓑⓒⓓ	**5.** ⓐⓑⓒⓓ	**6.** ⓐⓑⓒⓓ	**7.** ⓐⓑⓒⓓ	**8.** ⓐⓑⓒⓓ
	9. ⓐⓑⓒⓓ	**10.** ⓐⓑⓒⓓ	**11.** ⓐⓑⓒⓓ	**12.** ⓐⓑⓒⓓ	**13.** ⓐⓑⓒⓓ
	14. ⓐⓑⓒⓓ				

Space for Rough Work

Q.15 Two trains, each 50 m long are travelling in opposite direction with velocity 10 m/s and 15 m/s. The time of crossing is
(a) 2s (b) 4s
(c) $2\sqrt{3s}$ (d) $4\sqrt{3}\,s$

Q.16 A train of 150 metre length is going towards north direction at a speed of 10 m/s. A parrot flies at the speed of 5 m/s 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

Q.17 The distance between two particles is decreasing at the rate of 6 m/sec. If these particles travel with same speeds and in the same direction, then the separation increase at the rate of 4 m/s. The particles have speeds as
(a) 5 m/sec; 1 m/sec (b) 4 m/sec; 1 m/sec
(c) 4 m/sec; 2 m/sec (d) 5 m/sec; 2 m/sec

Q.18 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

Q.19 An express train is moving with a velocity v_1. Its driver finds another train is moving on the same track in the same direction with velocity v_2. To escape collision, driver applies a retardation a on the train, the minimum time of escaping collision will be
(a) $t = \frac{v_1 - v_2}{a}$ (b) $t_1 = \frac{v_1^2 - v_2^2}{2}$
(c) Both (a) and (b) (d) None of these

DIRECTIONS (Q.20-Q.22) : In the following questions, more than one of the answers given are correct. Select the correct answers and mark it according to the following codes:

Codes :
(a) 1, 2 and 3 are correct **(b)** 1 and 2 are correct
(c) 2 and 4 are correct **(d)** 1 and 3 are correct

Q.20 Two particles move simultaneously from two points A and B, 300m apart. The particle at A, starts towards B with a velocity of 25 m/s and that at B, moves normal to the former with a velocity of 20 m/s.
(1) The relative velocity of the particle at A, w.r.t. that at B is 32.02 m/s
(2) The relative velocity of the particle at A, w.r.t. that at B is 12.04 m/s
(3) They are closest to each other after 7.32 sec.
(4) They are closest to each other after 4.25 sec.

Q.21 A plane is to fly due north. The speed of the plane relative to the air is 200 km/h, and the wind is blowing from west to east at 90 km/h.
(1) The plane should head in a direction of $\sin^{-1}$ (0.45)
(2) The plane should head in a direction of $\sin^{-1}$ (0.60)
(3) The relative velocity of plane w.r.t. ground is 179 km/h
(4) The relative velocity of plane w.r.t. ground is 149 km/h

Q.22 From the top of a multi-storeyed building 40m tall, a boy projects a stone vertically upwards with an initial velocity of 10 ms^{-1} such that it eventually falls to the ground.
(1) After 4 s the stone will strike the ground
(2) After 2 s the stone will pass through the point from where it was projected
(3) Its velocity when it strikes the ground is 30 m/s
(4) Its velocity when it strikes the ground is 40 m/s

DIRECTIONS (Q.23-Q.25) : Read the passage given below and answer the questions that follows :

When an airplane flies, its total velocity with respect to the ground is $v_{total} = v_{plane} + v_{wind}$,
where v_{plane} denotes the plane's velocity through motionless air, and v_{wind} denotes the wind's velocity. Crucially, all the quantities in this equation are vectors. The magnitude of a velocity vector is often called the "speed."
Consider an airplane whose speed through motionless air is 100 meters per second (m/s). To reach its destination, the plane must fly east.
The "heading" of a plane is in the direction in which the nose of the plane points. So, it is the direction in which the engines propel the plane.

RESPONSE GRID					
	15. ⓐⓑⓒⓓ	16. ⓐⓑⓒⓓ	17. ⓐⓑⓒⓓ	18. ⓐⓑⓒⓓ	19. ⓐⓑⓒⓓ
	20. ⓐⓑⓒⓓ	21. ⓐⓑⓒⓓ	22. ⓐⓑⓒⓓ		

Space for Rough Work

Q.23 If the plane has an eastward heading, and a 20 m/s wind blows towards the southwest, then the plane's speed is –

(a) 80 m/s

(b) more than 80 m/s but less than 100 m/s

(c) 100 m/s

(d) more than 100 m/s

Q.24 The pilot maintains an eastward heading while a 20 m/s wind blows northward. The plane's velocity is deflected from due east by what angle?

(a) $\sin^{-1}\frac{20}{100}$ (b) $\cos^{-1}\frac{20}{100}$

(c) $\tan^{-1}\frac{20}{100}$ (d) none

Q.25 Let ϕ denote the answer of above question. The plane has what speed with respect to the ground ?

(a) (100 m/s) sin ϕ (b) (100 m/s) cos ϕ

(c) $\frac{100\ m/s}{\sin\phi}$ (d) $\frac{100\ m/s}{\cos\phi}$

DIRECTIONS (Qs. 26-Q.28) : Each of these questions contains two statements: Statement-1 (Assertion) and Statement-2 (Reason). Each of these questions has four alternative choices, only one of which is the correct answer. You have to select the correct choice.

(a) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(b) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1.

(c) Statement -1 is False, Statement-2 is True.

(d) Statement -1 is True, Statement-2 is False.

Q.26 Statement-1 : The magnitude of velocity of two boats relative to river is same. Both boats start simultaneously from same point on the bank may reach opposite bank simultaneously moving along different paths.

Statement-2 : For boats to cross the river in same time. The component of their velocity relative to river in direction normal to flow should be same.

Q.27 Statement-1 : The acceleration of a body of mass 2 kg thrown vertically upwards is always constant.

Statement-2 : A body of all mass group travels under constant acceleration when only gravity acts on it.

Q.28 Statement-1 : The velocity of a body A relative to the body B is the sum of the velocities of bodies A and B if both travel in opposite direction on a straight line.

Statement-2 : The velocity of a body A relative to the body B is the difference of the velocities of bodies A and B if both travel in opposite direction on a straight line.

RESPONSE GRID	23. ⓐⓑⓒⓓ 24. ⓐⓑⓒⓓ 25. ⓐⓑⓒⓓ 26. ⓐⓑⓒⓓ 27. ⓐⓑⓒⓓ 28. ⓐⓑⓒⓓ

DAILY PRACTICE PROBLEM SHEET 4 - PHYSICS			
Total Questions	28	Total Marks	112
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	28	Qualifying Score	44
Success Gap = Net Score – Qualifying Score			
Net Score = (Correct × 4) – (Incorrect × 1)			

Space for Rough Work

EBD_71

DAILY PRACTICE PROBLEMS

PHYSICS SOLUTIONS

04

1. (c) If a stone is dropped from height h

then $h = \frac{1}{2}gt^2$ ..... (i)

If a stone is thrown upward with velocity u then

$h = -ut_1 + \frac{1}{2}gt_1^2$ ..... (ii)

If a stone is thrown downward with velocity u then

$h = ut_2 + \frac{1}{2}gt_2^2$ ..... (iii)

From (i), (ii) and (iii) we get

$-ut_1 + \frac{1}{2}gt_1^2 = \frac{1}{2}gt^2$ ..... (iv)

$ut_2 + \frac{1}{2}gt_2^2 = \frac{1}{2}gt^2$ ..... (v)

Dividing (iv) and (v) we get

$$\therefore \frac{-ut_1}{ut_2} = \frac{\frac{1}{2}g(t^2 - t_1^2)}{\frac{1}{2}g(t^2 - t_2^2)}$$

$$\text{or } -\frac{t_1}{t_2} = \frac{t^2 - t_1^2}{t^2 - t_2^2}$$

By solving $t = \sqrt{t_1 t_2}$

2. (c) Since direction of v is opposite to the direction of g and h so from equation of motion

$$h = -vt + \frac{1}{2}gt^2$$

$$\Rightarrow \quad gt^2 - 2vt - 2h = 0$$

$$\Rightarrow \quad t = \frac{2v \pm \sqrt{4v^2 + 8gh}}{2g}$$

$$\Rightarrow \quad t = \frac{v}{g}\left[1 + \sqrt{1 + \frac{2gh}{v^2}}\right]$$

3. (c) $h = ut + \frac{1}{2}gt^2 \Rightarrow 1 = 0 \times t_1 + \frac{1}{2}gt_1^2 \Rightarrow t_1 = \sqrt{2/g}$

Velocity after travelling 1m distance

$v^2 = u^2 + 2gh \Rightarrow v^2 = (0)^2 + 2g \times 1 \Rightarrow v = \sqrt{2g}$

For second 1 meter distance

$$1 = \sqrt{2g} \times t_2 + \frac{1}{2}gt_2^2 \Rightarrow gt_2^2 + 2\sqrt{2g}t_2 - 2 = 0$$

$$t_2 = \frac{-2\sqrt{2g} \pm \sqrt{8g + 8g}}{2g} = \frac{-\sqrt{2} \pm 2}{\sqrt{g}}$$

Taking + ve sign $t_2 = (2 - \sqrt{2})/\sqrt{g}$

$$\therefore \frac{t_1}{t_2} = \frac{\sqrt{2/g}}{(2 - \sqrt{2})/\sqrt{g}} = \frac{1}{\sqrt{2} - 1} \text{ and so on.}$$

4. (d) Interval of ball throw = 2 sec.
If we want that minimum three (more than two) ball remain in air then time of flight of first ball must be greater than 4 sec.
T > 4 sec.

$$\frac{2u}{g} > 4\,\text{sec} \Rightarrow u > 19.6\,m/s$$

for u = 19.6 First ball will just strike the ground(in sky)
Second ball will be at highest point (in sky)
Third ball will be at point of projection or at ground (not in sky)

5. (a) The distance covered by the ball during the last t seconds of its upward motion = Distance covered by it in first t seconds of its downward motion

From $h = ut + \frac{1}{2}gt^2$

$h = \frac{1}{2}gt^2$ [As u = 0 for it downward motion]

6. (d) In the positive region the velocity decreases linearly (during rise) and in the negative region velocity increases linearly (during fall) and the direction is opposite to each other during rise and fall, hence fall is shown in the negative region.

7. (a) For the given condition initial height h = d and velocity of the ball is zero. When the ball moves downward its velocity increases and it will be maximum when the ball hits the ground & just after the collision it becomes half and in opposite direction. As the ball moves upward its velocity again decreases and becomes zero at height d/2. This explanation match with graph (a).

8. (c) Acceleration of body along AB is g cos θ

Distance travelled in time t sec $= AB = \frac{1}{2}(g\cos\theta)t^2$

From ΔABC, AB = 2R cosθ; $2R\cos\theta = \frac{1}{2}g\cos\theta t^2$

$$t^2 = \frac{4R}{g} \text{ or } t = 2\sqrt{\frac{R}{g}}$$

9. (b) It has lesser initial upward velocity.

10. (b) At maximum height velocity v = 0

We know that $v = u + at$, hence

$0 = u - gT \Rightarrow u = gT$

When $v = \frac{u}{2}$, then

$\frac{u}{2} = u - gt \Rightarrow gt = \frac{u}{2} \Rightarrow gt = \frac{gT}{2} \Rightarrow t = \frac{T}{2}$

Hence at $t = \frac{T}{2}$, it acquires velocity $\frac{u}{2}$.

11. (b) $t = \sqrt{\frac{2h}{g}} \Rightarrow \frac{t_1}{t_2} = \sqrt{\frac{h_1}{h_2}}$

12. (c) Speed of the object at reaching the ground $v = \sqrt{2gh}$
If heights are equal then velocity will also be equal.

13. (b) $S_{3rd} = 10 + \frac{10}{2}(2 \times 3 - 1) = 35m$

$S_{2nd} = 10 + \frac{10}{2}(2 \times 2 - 1) = 25 \Rightarrow \frac{S_{3rd}}{S_{2nd}} = \frac{7}{5}$

14. (c) $S_n \propto (2n-1)$. In equal time interval of 2 seconds
Ratio of distance = 1 : 3 : 5

15. (c) Net acceleration of a body when thrown upward
= acceleration of body – acceleration due to gravity
= a – g

16. (d) The initial velocity of aeroplane is horizontal, then the vertical component of velocity of packet will be zero.

So $t = \sqrt{\frac{2h}{g}}$

17. (b) $\text{Time} = \frac{\text{Total length}}{\text{Relative velocity}} = \frac{50+50}{10+15} = \frac{100}{25} = 4\,\text{sec}$

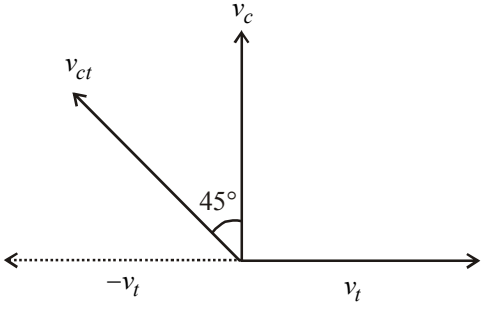
18. (d) Relative velocity
$= 10 + 5 = 15$ m/sec

$\therefore t = \frac{150}{15} = 10$ sec

19. (a) When two particles moves towards each other then
$v_1 + v_2 = 4$ ..... (i)
When these particles moves in the same direction then
$v_1 - v_2 = 4$ ..... (ii)
By solving $v_1 = 5$ and $v_2 = 1$ m/s

20. (b) $\vec{v}_{ct} = \vec{v}_c - \vec{v}_t$

$\vec{v}_{ct} = \vec{v}_c + (-\vec{v}_t)$



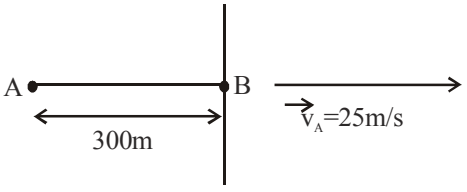
Velocity of car w.r.t. train $(\vec{v}_{ct})$ is towards West – North

21. (a) As the trains are moving in the same direction. So the initial relative speed $(v_1 - v_2)$ and by applying retardation final relative speed becomes zero.

From $v = u - at \Rightarrow 0 = (v_1 - v_2) - at \Rightarrow t = \frac{v_1 - v_2}{a}$

22. (d) Let $\vec{v}_A$ and $\vec{v}_B$ be the respective velocities of the particles at A and B. The relative velocity of particle at A. w.r.t. to that at B is given by

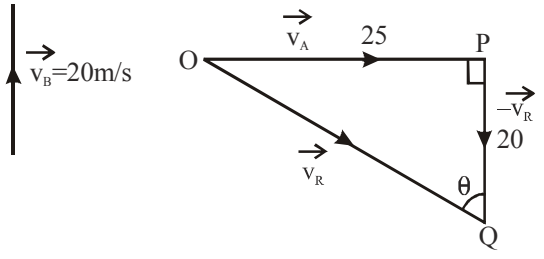
$\vec{v}_A - \vec{v}_B = \vec{v}_A + (-\vec{v}_B)$



(see figure). From triangle law of velocities if $\overrightarrow{OP}$ and $\overrightarrow{PQ}$ represent $\vec{v}_A$ and $-\vec{v}_B$, then the required relative velocity $\vec{v}_R$ is given by $\overrightarrow{OQ}$.

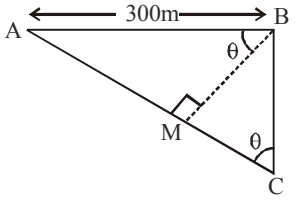
$|\vec{v}_R| = \sqrt{25^2 + 20^2} = \sqrt{625 + 400} = 32.02\ \text{m/s}$

If $\angle PQO = \theta$, then $\tan\theta = \frac{25}{20} \Rightarrow \theta = \tan^{-1}\left(\frac{5}{4}\right)$



Thus, the particle at A, appears to approach B, in a direction making an angle of $\tan^{-1}$ (5/4) with its direction of motion.

Let us draw a line from A, as AC, such that $\angle BCA$ is equal to θ.



Thus, to B, A appears to move along AC. From B, draw a perpendicular to AC as BM.
BM is the shortest distance between them.

$\therefore$ $BM = AB\cos\theta = 300 \times \frac{4}{\sqrt{41}} = 187.41$ m

Also, $AM = AB\sin\theta = 234.26$ m

$\therefore$ time taken to cover a distance

AB = 234.26 m with a velocity of 32.02 m/s

$= \frac{234.26}{32.02} = 7.32$ sec.

23. (d) Since the wind is blowing toward the east, the plane must head west of north as shown in figure. The velocity of the plane relative to the ground $\vec{v}_{pg}$ will be the sum of the velocity of the plane relative to the air $\vec{v}_{pa}$ and the velocity of the air relative to the ground $\vec{v}_{ag}$.

(i) 1. The velocity of the plane relative to the ground is given by equation :

$\vec{v}_{pg} = \vec{v}_{pa} + \vec{v}_{ag}$

2. The sine of the angle θ between the velocity of the plane and north equals the ratio of v_{ag} and v_{pa}.

$$\sin\theta = \frac{v_{ag}}{v_{pa}} = \frac{90 \text{ km/h}}{200 \text{ km/h}} = 0.45 \quad \therefore \theta = 26.74$$

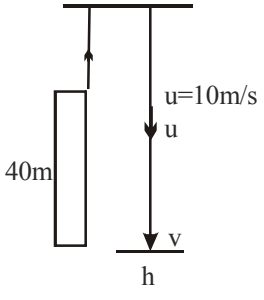
(ii) Since v_{ag} and v_{pg} are perpendicular, we can use the Pythagorean theorem to find the magnitude of $\vec{v}_{pg}$.

$v^2_{pg} = v^2_{ag} + v^2_{pg}$

$v_{pg} = \sqrt{v^2_{pa} - v^2_{ag}} = \sqrt{(200 \text{ km/h})^2 - (90 \text{km/h})^2}$

$= 179$ km/h.

24. **(a)** Using, $\vec{S} = \vec{u}T + \frac{1}{2}\vec{a}T^2$



(i) $-40 = 10T - \frac{1}{2}gT^2$

or $-40 = 10T - 5T^2$

or $5T^2 - 10T - 40 = 0$

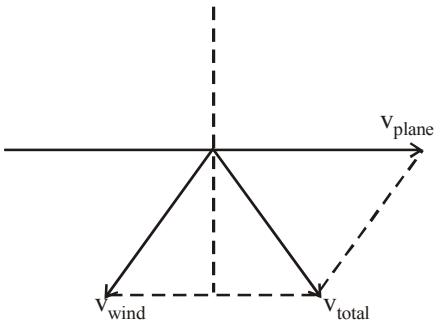
or $T = \frac{10 + \sqrt{10^2 - 4\times5(-40)}}{2\times5} = \frac{10 + \sqrt{100 + 800}}{10}$

$= \frac{10+30}{10} = 4$ sec.

(ii) $t = \frac{2\times10}{g} = 2$ sec.

(iii) $v = 10 + g \times 2 = 30$ m/s

25. **(b)** $V_{plane} = 100$ m/s



$V_{total} = \sqrt{(20)^2 + (100)^2 + 2\times20\times100\times\cos135°}$

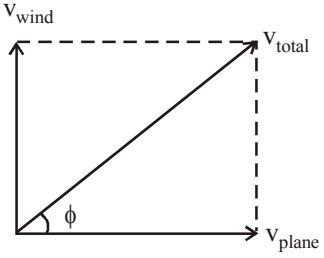
$= \sqrt{400 + 10000 + 2\times20\times100\times\left(-\frac{1}{\sqrt{2}}\right)}$

$= 87$ m/s

26. **(c)** $\tan\phi = \frac{v_{wind}}{v_{plane}}$

$= \frac{20}{100}$

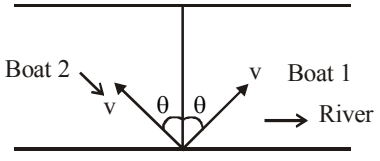
$\therefore \phi = \tan^{-1}\left(\frac{20}{100}\right)$



27. **(d)** $\cos\phi = \frac{v_{plane}}{v_{total}}$

$\therefore v_{total} = \frac{v_{plane}}{\cos\phi} = \frac{100}{\cos\phi}$ m/s

28. **(a)** If components of velocities of boat relative to river is same normal to river flow (as shown in figure) are same, both boats reach other bank simultaneously.



29. **(a)** Both statement - 1 & statement - 2 are correct and statement - 2 is correct explanation of statement - 2

30. **(d)** Statement - 1 is true but statement - 2 is false.