

Max Marks: 60

Date: 28.08.2022

NEET 24 MR BATCH PHYSICS : DCT Topic: Projectile Motion

- 1. A ball is thrown at an angle θ with the horizontal. Its horizontal range is 60 m and time of flight is 3s. What is the horizontal component of its velocity of projection?
 - (a) 20 m/s (b) 30 m/s (c) 15 m/s (d) 10 m/s
- 2. The maximum vertical height to which a boy can throw a ball is 40 m. What is the maximum possible horizontal distance to which he can throw the ball?
 - (a) 20 m (b) 40 m (c) 60 m (d) 80 m
- 3. A ball is projected with a velocity v making an angle θ with the horizontal. If its horizontal range is expressed as $R = \frac{\sqrt{3}v^2}{2g}$, what is the value of the angle of projection? (a) 15° (b) 20° (c) 45° (d) 30°
- 4. For angles of projection of projectile at angles $(45^{\circ} \theta)$ and $(45^{\circ} + \theta)$, the horizontal ranges described by the projectile are in the ratio of
 - (a) 1:1 (b) 1:2 (c) 2:1 (d) 2:3
- 5. A projectile is projected with initial velocity 6m/s in horizontal direction and 8m/s in vertical direction. If $g = 10 m/s^2$, then the horizontal range is
 - (a) 9.6 m (b) 4.8 m (c) 19.2 m (d) 2.4 m



- 6. For a body projected at angle of 45° to the horizontal, the horizontal range (R) and maximum height (H) are related as
 - (a) R = 16H (b) R = 8H (c) R = 4H (d) R = 2H
- 7. Two projectiles A and B thrown with speeds in the ratio $1:\sqrt{2}$ acquired the same maximum heights. If A is thrown at an angle of 45° with the horizontal, the angle of projection of B will be
 - (a) 0° (b) 60° (c) 30° (d) 45°
- 8. A ball is projected with the same velocity but at different angles with the horizontal. For which angle of projection from the following the height reached by the ball is maximum?
 - (a) 30° (b) 45° (c) 60° (d) 80°
- 9. A water fountain on the ground sprinkles water all around it. If the speed of water coming out of the fountain is v, the total maximum area around the fountain that gets wet is
 - (a) $\pi \frac{v^2}{g}$ (b) $\pi \frac{v^4}{g^2}$ (c) $\frac{\pi}{2} \frac{v^4}{g^2}$ (d) $\pi \frac{v^2}{g^2}$
- 10. A body is thrown with a velocity of 10 m/s making an angle of 30° with the horizontal. It will hit the ground after a time-
 - (a) 3 s (b) 2 s (c) 1.5 s (d) 1 s
- The angle of projection of a body is 15°. The other angle for which the range is the same as the first one is equal to-
 - (a) 30° (b) 45° (c) 60° (d) 75°



- 12. If four balls A, B, C, D are projected with same speed at angles of 15°, 30°, 45° and 60° with the horizontal respectively, the two balls which will fall at the same place will be-
 - (a) A and B (b) A and D (c) B and D (d) A and C
- 13. Two balls are projected from the same point in direction inclined at 60° and 30° to the horizontal. If they attain the same maximum height, what is the ratio of their velocities of projection?
 - (a) $1:\sqrt{3}$ (b) $\sqrt{3}:1$ (c) 1:1 (d) 1:2
- 14. A stone is projected with speed u at an angle θ with the horizontal from a high tower and lands on ground. Then :
 - (i) Range of stone $=\frac{u^2 \sin 2\theta}{g}$ (ii) Time of flight $=\frac{2u \sin \theta}{g}$ Select correct one -(a) Only statement (i) is correct (b) Only statement (ii) is correct (c) Both (i) and (ii) are correct (d) Neither (i) nor (ii) is correct
- 15. Three particles, A , B and C are projected from the same point with same initial speeds making angles 30° , 45° and 60° respectively with the horizontal. Which of the following statement is correct ?
 - (a) A, B and C have equal ranges
 - (b) ranges of A and C are equal and less than that of B $\,$
 - (c) ranges of A and C are equal and greater than that of B $\,$
 - (d) A, B and C have equal ranges



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NEET 24 MR BATCH CHEMISTRY: DCT Topic: Gaseous State

16.	Mass of 6.022×10^{23} molecules of a gas is called											
	(a)	molar mass	(b)	Avogadro mass	(c)	normal mass	(d)	atomic number				
17.	Relatio	ation between ° C and Kelvin is										
	(a)	$^{\circ}C = \left(\frac{5}{6}K - 32\right)$	(b)	K = °C - 273	(c)	K = 273 + °C	(d)	$\mathrm{K} = \frac{5}{9} \left(^{\circ}\mathrm{C} - 32\right)$				
18.	Atmos	pheric pressure is m	easured	by								
	(a)	voltmeter	(b)	barometer	(c)	galvanometer	(d)	thermometer				
19.	The SI	unit of pressure is										
	(a)	atm	(b)	torr	(c)	Pascal	(d)	N m ²				
20.	The SI	unit of temperature	of a gas	is								
	(a)	°C	(b)	Κ	(c)	°F	(d)	all of these				
21.	In the o	case of gases, relativ	ve densit	y is measured with re	spect to	gas and is	called v	apour density				
	(a)	oxygen	(b)	helium	(c)	hydrogen	(d)	nitrogen				
22.	The pr	ocess of spontaneou	s inter n	nixing of two or more	gases to	o form homogeneous	mixture	is called				
	(a)	diffusion	(b)	absorption	(c)	desorption	(d)	fusion				
23.	Rate of	f diffusion of a gas i	s									
	(a) volume of the gas diffused per square meter(b) volume of the gas diffused per unit time											
	(c)	(c) number of moles of the gas diffused per square unit time										
	(d) number of moles of the gas diffused in one second											
	Space for Rough Work											





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24.

Lighter gases diffuse _____ heavier gases.

	(a)	slower than				faster than				
	(c)	at the same rate as	6		(d)	at moderate rate than				
25.	Boyle'	s law is applicable	when	is/are constant	•					
	(a)	Only temperature			(b)	only number of mol	es			
	(c)	both temperature a	and num	ber of moles	(d)	both pressure and volume				
26.	If P, V	, T represent pressu	ıre, volu	me and temperature	of the ga	s, the CORRECT rep	resentat	ion of Boyle's law is		
	(a)	V	nt P and	n)	(b)	PV = T				
	(c)	$P \approx \frac{1}{V}$ (at consta	nt T and	n)	(d)	$PV = \frac{1}{T}$				
27.	At con	stant T and n, Boyle	e's law c	an be mathematically	y stated a	IS				
	(a)	PV = Constant	(b)	$\frac{P}{V} = Constant$	(c)	P + V = Constant	(d)	P - V = Constant		
28.	For giv	en mass of an ideal	gas, wh	ich of the following	statemen	ts is CORRECT?				
	(a)	At a constant temp	perature,	the pressure is direct	tly propo	ortional to the density	of a gas			
	(b)	At a constant temp	perature,	the pressure is direct	tly propo	ortional to the volume	on a gas	8.		
	(c)	At a constant pres	sure, the	volume is inversely	proportio	onal to the temperatur	e of a ga	as		
	(d)	At a constant volu	me, pres	sure is inversely prop	portional	to the temperature of	f a gas.			
29.		_°C is absolute zer	ro tempe	rature.						
	(a)	237.15	(b)	273.15	(c)	-273.15	(d)	-237.15		
30.	On abs	olute temperature s	cale, -10	°C is						
	(a)	263.15 K	(b)	283.15 K	(c)	2915 K	(d)	310.15K		



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NEET 24 MR BATCH PHYSICS : DCT ANSWER KEY Topic: Projectile Motion

1.	(a)	2.	(d)	3.	(d)	4.	(a)	5.	(a)
6.	(c)	7.	(c)	8.	(d)	9.	(b)	10.	(d)
11.	(d)	12.	(c)	13.	(a)	14.	(d)	15.	(b)

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NEET 24 MR BATCH CHEMISTRY: DCT ANSWER KEY Topic: Gaseous State

16.	(a)	17.	(c)	18.	(b)	19.	(c)	20.	(b)
21.	(c)	22.	(a)	23.	(b)	24.	(b)	25.	(c)
26.	(c)	27.	(a)	28.	(a)	29.	(c)	30.	(a)