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Date Tim	e:		PHYSICS
Mar	ks:	THEODY	
	KINETIC	THEORY	
	Single Correc	t Answer Type	
1.	The rate of cooling at 600 K, if surrounding temper	rature is 300K is R . The rate	_
	a) $\frac{16}{3}R$ b) 2 R	c) 3 R	d) $\frac{2}{3}R$
2.	An ideal gas ($\gamma = 1.5$) is expanded adiabatical reduce the root mean square velocity of molecular reduced the root mean square reduced the	•	ne gas to be expanded to
	a) 4 times b) 16 times	c) 8 times	d) 2 times
3.	If number of molecules of H_2 are double than that	•	•
J.	of oxygen at 300 K is	or σ_2 , then ratio of kinetic ef	iergy of flydrogen and that
	a) 1:1 b) 1:2	c) 2:1	d) 1 : 16
4.	A cylinder of fixed capacity 44.8 litre contains a m		emperature and pressure.
	The amount of heat required to cylinder by 10°C w	rill be	
	(R = universal gas constant)	-) 200	1) 200
F	a) R b) 10R	c) 20 <i>R</i>	d) 30 <i>R</i>
5.	The equation of state for 5g of oxygen at a pre-	ssure <i>p</i> and temperature <i>i</i>	, when occupying a
	volume V , will be a) $pV = (5/32)RT$ b) $pV = 5RT$) II (F (2) DW	D W (F (4 C) D/II
		_	
6.	A bubble of 8 mole of helium is submerged at a		-
	increases by 30°C. How much heat is added ap		
7.	a) 4000 J b) 3000 J The specific heat of an ideal gas is	c) 3500 J	d) 4500 J
/.	a) Proportional to T b) Proportional to T^2	c) Proportional to T^3	d) Independent of T
8.	The absolute temperature of a gas is determined b	•)
	a) The average momentum of the molecules	b) The velocity of sound	in the gas
	c) The number of molecules in the gas	d) The mean square velo	_
9.	If the rms velocity of a gas is v , then		
	a) $v^2T = \text{constant}$	b) $v^2/T = \text{constant}$	
	c) $vT^2 = \text{constant}$	d) v is independent of	T
10.	It is seen that in proper ventilation of building	, windows must be opene	d near the bottom and the
	top of the walls, so as to let pass	•	
	a) In hot near the roof and cool air out near	theb) Out hot air near the	roof
	bottom		
	c) In cool air near the bottom and hot air our	d) In more air	
	near the roof		
11.	The coefficiency of apparent expansion of a liquid	when determined using two	different vessels
	A and B are λ_1 and λ_2 , respectively. If the coefficient	_	
	of linear expansion of vassel B is	•	
	a) $\frac{\alpha \gamma_1 \gamma_2}{\gamma_1 + \gamma_2}$ b) $\frac{\gamma_1 - \gamma_2}{2\alpha}$	c) $\frac{\gamma_1 - \gamma_2 + \alpha}{3\alpha}$	d) $\frac{\gamma_1 - \gamma_2}{\gamma_1 + \alpha}$
		Ju	3
12.			
	(the pressure of the atmosphere is equal to the 10 constant and the surface tension is neglected, the	-	n die temperature is

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ລໂ	3	.53	m

d) 12.53 m

13. Two gases A and B having same pressure p, volume V and absolute temperature T are mixed. If the mixture has the volume and temperature as V and T respectively, then the pressure of the mixture is

c)
$$\frac{p}{2}$$

14. In the relation $n = \frac{PV}{RT}$, n =

a) Number of molecules b) Atomic number

c) Mass number

d) Number of moles

15. Inside a cylinder closed at both ends is a movable piston. On one side of the piston is a mass m of a gas, and on the other side a mass 2 m of the same gas. What fraction of the volume of the cylinder will be occupied by the larger mass of the gas when the piston is in equilibrium? The temperature is the same throughout.

a)
$$\frac{2}{3}$$

b)
$$\frac{1}{3}$$

c)
$$\frac{1}{2}$$

d)
$$\frac{1}{4}$$

16. At what temperature is the kinetic energy of a gas molecule double that of its value of 27°C

17. The diameter of oxygen atom is 3Å. The fraction of molecular volume to the actual volume occupied by oxygen at STP is

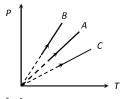
a)
$$6 \times 10^{-28}$$

b)
$$8 \times 10^{-4}$$

c)
$$4 \times 10^{-10}$$

d)
$$4 \times 10^{-4}$$

18. Pressure versus temperature graph of an ideal gas at constant volume *V* of an ideal gas is shown by the straight line A. Now mass of the gas is doubled and the volume is halved, then the corresponding pressure versus temperature graph will be shown by the line



a) A

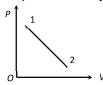
b) B

c) C

d) None of these

19. 10 moles of an ideal monoatomic gas at 10°C is mixed with 20 moles of another monoatomic gas at 20°C. Then the temperature of the mixture is

20. A volume *V* and pressure *P* diagram was obtained from state 1 to state 2 when a given mass of a gas is subjected to temperature changes. During this process the gas is



a) Heated continuously

- b) Cooled continuously
- c) Heated in the beginning and cooled towards the end
- d) Cooled in the beginning and heated towards the
- 21. Volume of gas becomes four times if
 - a) Temperature becomes four times at constant pressure
 - b) Temperature becomes one fourth at constant pressure
 - c) Temperature becomes two times at constant pressure
 - d) Temperature becomes half at constant pressure
- 22. If C_p and C_v denote the specific heats of nitrogen per unit mass at constant pressure and constant volume respectively, then

a)
$$C_v - C_v = R/28$$

b)
$$C_v - C_v = R/14$$

c)
$$C_{v} - C_{v} = F$$

d)
$$C_v - C_v = 28R$$

a) $C_p - C_v = R/28$ b) $C_p - C_v = R/14$ c) $C_p - C_v = R$ d) $C_p - C_v = 28R$ 23. A monoatomic gas is kept at room temperature 300K. Calculate the average kinetic energy of gas molecule (Use $k = 1.38 \times 10^{-23} MKS$ units)

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24.	a) 0.138 <i>eV</i> The figure shows the volu	b) 0.062 <i>eV</i> ume <i>V</i> versus temperature	c) 0.039 <i>eV</i> T graphs for a certain mass	d) 0.013 <i>eV</i>
	•	and P_2 . What inference can	-	or a periodigas at the
	$V \longrightarrow P_2$ $\theta_1 \longrightarrow T$			
	a) $P_1 > P_2$		b) $P_1 < P_2$	drawn due to insufficient
	c) $P_1 = P_2$		information	drawn due to mourneiene
25.	and volumes, then which		. If P_a , P_b and V_a and V_b are	their respective pressure
	a) $P_a \neq P_b$; $V_a = V_b$	b) $P_a = P_b$; $V_a \neq V_b$	c) $\frac{P_a}{V_a} = \frac{P_b}{V_b}$	$d) P_a V_a = P_b V_b$
26.		7°C and pressure 76 <i>cm. H</i> b) 2.44	w b	in litre) d) 44.2
27.	isotherms can be represe	gas is given by $\left(P + \frac{aT^2}{V}\right)V$ ented by $P = AV^m - BV^n$, v b) $m = c$ and $n = 1$	where A and B depend only	on temperature and
28.		7°C) the rms speed of the m		
	a) Cl ₂	b) 0 ₂	c) N ₂	d) H ₂
29.		l thermal conductivity K_1 is		
		se thermal conductivity is <i>k</i>		
		nbined system are maintain	led at temperatures T_1 and	T_2 . The effective thermal
	conductivity of the system	n, in the steady state is	V + 2V	2V + V
	12	b) $K_1 + K_2$	1	d) $\frac{3K_1 + K_2}{4}$
30.	_	y the gas on the walls of th		
	a) It loses kinetic energy	11 .1 . 1 .	b) It sticks with the walls	1 .1 11
	c) On collision with the w momentum	valls there is a change in	d) It is accelerated toward	ds the walls
31.		, a molecule of mass m of a		vall of vessel with velocity
	_	ar momentum of the molect		1) 7
22	a) 2mV	b) <i>mV</i>	c) -mV	d) Zero
34.		mic ideal gas is mixed wi		c ideal gas. The molar
	-	ture at constant volume i		1) A D
22	a) (3/2) <i>R</i>	b) (5/2) <i>R</i>	c) 2 <i>R</i>	d) 4 <i>R</i>
33.		of a gas are f , then the ratio		4
	a) $\frac{2}{f} + 1$,	c) $1 + \frac{1}{f}$	d) $1 - \frac{1}{f}$
34.	The ratio of root mean	square velocity of O_3 and	$d O_2$ is	
	a) 1:1	b) 2: 3	c) 3:2	d) $\sqrt{2} : \sqrt{3}$
35.	In thermal equilibrium, tl	he average velocity of gas n	nolecules is	
	a) Proportional to \sqrt{T}	b) Proportional to T^2	c) Proportional to T^3	d) Zero
36.	Oxygen and hydrogen a	are at the same temperat	ure T. The ratio of the me	ean kinetic energy of
	oxygen molecules to th	at of the hydrogen molec	cules will be	

c) 4:1

b) 1:1

a) 16:1

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37.	At constant volume the sp	pecific heat of a gas is $\frac{3R}{2}$, th	en the value of $'\gamma'$ will be	
	a) $\frac{3}{2}$	b) $\frac{5}{2}$	c) $\frac{5}{3}$	d) None of the above
38.	two moles of gas at 400	volume of 200 mL at 100 mm pressure and at san	ne temperature?	
39.	a) 50 mLMolecules of a gas behavea) Inelastic rigid sphere	b) 100 mL e like	c) 200 mLb) Perfectly elastic non-ri	d) 400 mL gid sphere
40.	c) Perfectly elastic rigid s For an ideal gas of diatom	-	d) Inelastic non-rigid sph	· .
	a) $C_p = \frac{5}{2}R$	b) $C_v = \frac{3}{2}R$	c) $C_p - C_v = 2R$	d) $C_p = \frac{7}{2}R$
41.	a) Increases in pressure	•	c) Both (a) and (b)	d) None of these
42.	gas at one atmosphere an	qual volume, are connected at 300K. Now if one vessel constant temperature 300	is immersed in a bath of co $\it K$. Then the common press	nstant temperature 600 <i>K</i> ure will be
	a) 1 <i>atm</i>	b) $\frac{4}{5}atm$	c) $\frac{4}{3}atm$	d) $\frac{3}{4}atm$
43.	-	omic and diatomic gases are b) $C_p(mono) = C_v(dia)$		
44.	If mass of He is 4 times a) 2 times of H-mean va b) $\frac{1}{2}$ times of H-mean va c) 4 times of H-mean va d) Same as H-mean value	lue PLUS ELULA alue	•	
45.		graph what inference can	be drawn	
	V_2 V_2 O_2 O_3 O_4 O_4 O_4 O_5 O_4 O_5 O_6 O_7 O_8			
1.0	a) $V_2 > V_1$	b) $V_2 < V_1$		d) None of the above
46.	The volume of a gas at protection the quantity of gas in g —		temperature 2/°C is 83 liti	res. If $R = 8.3 J/mol K$, then
	a) 15	b) 42	c) 7	d) 14
47.	At what temperature rr a) 819°C	ns speed of air molecules b) 719°C	s is doubled of that at NT c) 909°C	P? d) None of these

d) $\frac{1}{2}R$

a) $\frac{5}{2}R$

volume per mole (gram mole) is

b) $\frac{3}{2}R$

48. Supposing the distance between the atoms of a diatomic gas to be constant, its specific heat at constant

c) R

49.	•	cted to a pressure of 20 atm alf of the gas is released fro		27°C. The pressure of the erature of the remainder is
	a) 8.5 <i>atm</i>	b) 10.8 atm	c) 11.7 atm	d) 17 atm
50.	If the mean free path of a	toms is doubled then the pr	ressure of gas will become	
	a) <i>P</i> /4	b) <i>P</i> /2	c) P/8	d) <i>P</i>
51.	The specific heat of a gas			
	a) Has only two values C_F	σ and C_V	b) Has a unique value at a	a given temperature
	c) Can have any value bet	tween 0 and ∞	d) Depends upon the mas	ss of the gas
52.	The degrees of freedom of	f a stationary rigid body ab	out its axis will be	
	a) One	b) Two	c) Three	d) Four
53.	molecules dissociate into	two atoms. The new root n	nean square speed of the a	
	a) $\sqrt{2}v$	b) <i>v</i>	c) 2 <i>v</i>	d) 4v
54.		mean kinetic energy of O_2		
	a) 127°C	b) 527°C	c) -73°C	d) -173°C
55.	-	eal gas is increased from 27	-	
	a) 37%	b) 11%	c) 33%	d) 15.5%
56.	volume. If the system mo	ty $ ho$ and $ar{c}$ as the root mean ves as whole with velocity a	v, then the pressure exerte	d by the gas is
	a) $\frac{1}{3}\rho\bar{c}^2$	$b)\frac{1}{3}\rho(c+v)^2$	c) $\frac{1}{3}\rho(\bar{c}-v)^2$	d) $\frac{1}{3}\rho(c^{-2}-v)^2$
57.		$00\ ml$ of a gas in increased	from 70 cm to 120 cm of n	nercury at constant
	temperature, the new vol			
	a) 700 <i>ml</i>	b) 600 ml	c) 500 ml	d) 400 <i>ml</i>
	evacuated chamber. The emolecules to that of the v a) $\frac{1}{2\sqrt{2}}$	b) $\frac{1}{4}$	If at constant temperature T in the chamber outside the column T in T in T in T	T. The ratio of v_{rms} of O_2 box after a short interval is d) $\sqrt{2}$
59.		gas pressure P and average		
	a) $P = \frac{1}{2}E$	b) $P = E$	c) $P = \frac{3}{2}E$	$d) P = \frac{2}{3} E$
61.	 a) Is proportional to the set b) Is proportional to the set c) Is proportional to the set d) Does not depend upon For hydrogen gas C_P - C_V a) a = 16b Which of the following state a) Absolute zero degree to b) Two different gases at c) The root mean square temperature are the set 	b) $b = 16a$ atements is true emperature is not zero ene the same temperature presspeed of the molecules of dame	temperature of the gas e gas berature of the gas of the gas $a - C_V = b$. So the relation $a = a + b$ or ergy temperature essure have equal root mean different ideal gases, maintains	between a and b is given by d) $a = b$
63.	molecules At a given temperature tha) Same b) Proportional to molecular	ne $r.m.s.$ velocity of molecular weight	ıles of the gas is	

	c) Inversely proportional	l to molecular weight		
	d) Inversely proportional	l to square root of molecula	r weight	
64.	The gas equation $\frac{PV}{T} = \cos \theta$	nstant is true for a constant	t mass of an ideal gas unde	rgoing
	a) Isothermal change	b) Adiabatic change	c) Isobaric change	d) Any type of change
65.	The root mean square sp	eed of the molecules of a ga	s is	
	a) Independent of its pre	ssure but directly proportio	onal to its Kelvin temperati	ıre
		to the square roots of both i	=	= -
		ssure but directly proportion		s Kelvin temperature
		to both its pressure and its	-	
66.	At constant pressure, w	which of the following is t	rue?	
	a) $v \propto \sqrt{\rho}$	$\frac{1}{1}$	a) 11 × a	d) $v \propto \frac{1}{\sqrt{\rho}}$
	a) $v \propto \sqrt{\rho}$	$\rho \sim \frac{1}{\rho}$	c) $v \propto \rho$	$\sqrt{\rho}$
67.	Two moles of monoatom	ic gas is mixed with three m		molar specific heat of the
	mixture at constant volum	ne is		
	a) 1.55 <i>R</i>	b) 2.10 <i>R</i>	c) 1.63 R	d) 2.20 <i>R</i>
68.	If p is the pressure, V the pressure of	ne volume, R the ags cons	stant, k the Boltzmann's ϵ	constant and T the
	absolute temperature,	then the number of mole	cules in the given mass o	f the gas is given by
	a) $\frac{pV}{RT}$	b) $\frac{pV}{\nu T}$	c) $\frac{pR}{T}$	d) <i>pV</i>
	$\frac{a}{RT}$	$\frac{b}{kT}$	\overline{T}	α) <i>ρ</i> ν
69.	-	nolecules of a gas at a press	-	
		but temperature is raised t		
	a) $1.5 kms^{-1}$	b) 2 <i>kms</i> ⁻¹		d) $1 kms^{-1}$
70.	-	e V and temperature T of a	-	
		and temperature 2T, then	the ratio of the number of i	molecules in the jar A and B
	will be			
	a) 1 : 1	b) 1 : 2 s of a gas (in arbitrary unit:	c) 2:1	d) 4 : 1
71.			s) are as follows: 2,3,4,5,6.	The root mean square
	speed for these molecule		a) 4.00	4) 4.24
72	a) 2.91	b) 3.52	c) 4.00	d) 4.24
12.		vill the rms speed of air m		
70	•	b) 619°C		,
/3.				the gas is 4 kgm^{-3} . What
		due to its thermal motion		
	a) 3×10^4 J	b) $5 \times 10^4 \text{ J}$	c) $6 \times 10^4 \text{ J}$	d) $7 \times 10^4 \text{J}$
74.		g of gas at pressure of 10^7 Λ		aken out of the cylinder, if
	a) 15.2 kg	6 N/m^2 , will be (Temperatib) 3.7 kg	are of gas is constant)	d) 7.5 <i>kg</i>
75	-	, ,	-	ient of cubical expansion of
73.	metal is less than that wa		and w_2 at 30 G. The coeffic	ient of cubical expansion of
	a) $w_1 < w_2$	b) $w_1 > w_2$	c) $w_1 = w_2$	d) Data is not sufficient
76		e speed four times as that	, <u> </u>	•
, 01	a) He (molecular mass	=	b) O ₂ (molecular mass:	·
	c) H ₂ (molecular mass		d) CH ₄ (molecular mass	
77	· - ·		- · · · · · · · · · · · · · · · · · · ·	=
//.		nolecular forces of attrac		
70	a) <i>p</i>	b) < p	c) > <i>p</i>	d) Zero
/ B.		lecule of constant temperat		
	a) <i>P</i>	b) <i>V</i>	c) <i>m</i>	d) n (number density)

79.	What is the mass of 2 L of nitro	gen at 22.4 atm	pressure and 273 K?	
	a) 28 g b) 14 :	× 22.4 g	c) 56 g	d) None of these
80.	The root mean square velocity of	O		perature is proportional to
	a) m^0 b) m		c) \sqrt{m}	d) $\frac{1}{\sqrt{m}}$
81.	For a gas at a temperature <i>T</i> the r	oot-mean-square	velocity v_{rms} , the most	probable speed v_{mp} , and the
	average speed v_{av} obey the relati	onship		
	a) $v_{av} > v_{rms} > v_{mp}$ b) v_{rm} .	$v_{av} > v_{av} > v_{mp}$	c) $v_{mp} > v_{av} > v_{rms}$	$d) v_{mp} > v_{rms} > v_{av}$
82.	The ratio of the molar heat cap	acities of a diato	mic gas at constant p	ressure to that at constant
	volume is			
	. 7		3	7
	a) $\frac{7}{2}$ b) $\frac{3}{2}$		c) $\frac{3}{5}$	d) $\frac{7}{5}$
83.	A flask of volume 10 ³ cc is comp	letely filled with	mercury at 0°C. The co	pefficient of cubical expansion of
	mercury is 180×10^{-6} °C ⁻¹ and the	-	=	1
	If the flask in now placed in boiling	-		ll overflow?
	a) 7 cc b) 14 c	_	c) 21 cc	d) 28 cc
84.	Pressure of an ideal gas is incre	eased by keeping	temperature consta	nt. What is the effect on
	kinetic energy of molecules?	, ,		
	a) Increases		b) Decrease	
	c) No change		d) Can't be determi	ned
85.	A monoatomic gas molecule has		,	
	a) Three degrees of freedom		b) Four degrees of fr	reedom
	c) Five degrees of freedom	1.41	d) Six degrees of free	
86.	If the ratio of vapour density for h	ovdrogen and oxyg		
	rms velocities will be	-y g	16'	,
		EDIL	n a ferran n i	16
	a) $\frac{4}{1}$ b) $\frac{1}{4}$	us EDU(c) $\frac{1}{16}$	d) $\frac{16}{1}$
87.				es and at high pressure such that
	it deviates from the ideal gas beha	avior. The variatio	n of $\frac{PV}{PT}$ with P is shown	in the diagram. The correct
	variation will correspond to		KI	
	PV/RT ↑			
	2.0 A B			
	1.0			
	\sim			
	0, 0 20 40 60 80 100 P (atm)			
	a) Curve A b) Curv	ve B	c) Curve C	d) Curve D
88.	The vapour of a substance behave		,	,
	a) Below critical temperature	S	b) Above critical tem	perature
	c) At 100°C		d) At 1000°C	
89.	Two different masses m and $3m$ of	of an ideal gas are	heated separately in a	vessel of constant volume, the
	pressure P and absolute tempera	ture T, graphs for	these two cases are sh	own in the figure as A and B . The
	ratio of slopes of curves <i>B</i> to <i>A</i> is			
	P ↑ B			
	3m A			

b) 1:3

90.		a gas is 44. The volume occ	upied by 2.2 $\it g$ of this gas at	t 0°C and 2 <i>atm</i> . pressure
	will be			
	a) 0.56 <i>litre</i>	b) 1.2 litres	c) 2.4 litres	d) 5.6 <i>litres</i>
91.	The temperature of a ga	as is -68°C. At what temp	erature will the average	kinetic energy of its
	molecules be twice that	of at -68°C?		
	a) 137°C	b) 127°C	c) 100°C	d) 105°C
92.	A vertical column 50 cm l	ong at 50°C balances anotl	her column of liquid 60 cm	long at 100°C. The
	coefficient of absolute exp	pansion of the liquid is		
	a) 0.005°C ⁻¹	b) 0.0005°C ⁻¹	c) 0.002°C ⁻¹	d) 0.0002°C ⁻¹
93.	The change in volume <i>V</i> v	vith respect to an increase	in pressure <i>P</i> has been sho	wn in the figure for a non-
	ideal gas at four different	temperatures T_1 , T_2 , T_3 and	d T_4 . The critical temperatu	re of the gas is
	P			
	7 ₁ 7 ₂ 7 ₃ 7 ₄ 7 ₄ 7 ₄			
	$(0,0)$ V a) T_1	b) T ₂	c) T ₃	d) T ₄
94.		, -	27° C to 227° C, its $r.m.s.$ sp	• •
74.	metre/s to V_s . The V_s is	lueal gas is ilicreased iroili	2/ C to 22/ C, its / . //it. 5. 5	Jeeu changeu il om 400
	a) 516 metre/s	b) 450 <i>metre/s</i>	c) 310 metre/s	d) 746 metre/s
95.	•	,	one mole of the gas is equa	•
<i>7</i> 3.				
	a) $\frac{3}{2}RT$	b) $\frac{2}{3}RT$	c) $\frac{1}{2}RT$	d) $\frac{2}{3}KT$
96.	= =	e kept in a lorry moving w	ith uniform speed. The tem	perature of the gas
	molecules inside will	7		
	a) Increase		b) Decrease	
	c) Remain same	TOLLIC EDILL	d) Decrease for some, wh	ile increase for others
97.	For an ideal gas	TLF02 EDO!	WITON	
	a) C_p is less than C_V		b) \mathcal{C}_p is equal to \mathcal{C}_V	
	c) C_p is greater than C_V		$d) C_p = C_V = 0$	
98.	The average kinetic energ	gy of hydrogen molecules a	t $300 K$ is E . At the same te	emperature, the average
	kinetic energy of oxygen i			
	a) E/4	b) E/16	c) <i>E</i>	d) 4 <i>E</i>
99.		If pressure is doubled, ten	nperature becomes four tin	nes, how many times its
	density will become	15.4	1	1
	a) 2	b) 4	c) $\frac{1}{4}$	d) $\frac{1}{2}$
100	Two containers of equal t	volumo contain the came go	4	Z
100.			as at the pressure $ ho_1$ and $ ho_2$ as reaches a common pressi	and absolute temperatures
	temperature T . The ratio		is reaches a common pressu	are p and a common
	-		1 $n_1T_2 + n_2T_1$	$n_1 T_2 - n_2 T_1$
	a) $\frac{F_1 + 2 + F_2 + 1}{T_1 \times T_2}$	b) $\frac{F_1 + F_2 + F_2}{T_1 + T_2}$	c) $\frac{1}{2} \left[\frac{p_1 T_2 + p_2 T_1}{T_1 T_2} \right]$	$d) \frac{r_1 \cdot r_2 - r_2 \cdot r_3}{T_1 \times T_2}$
101	22 g of carbon dioxide at	27°C is mixed in a closed co	ontainer with 16 g of oxyge	n at 37°C. If both gases are
	considered as ideal gases,	, then the temperature of th	he mixture is	
	a) 24.2°C	b) 28.5°C	c) 31.5°C	d) 33.5°C
102	The molar specific heat at	constant pressure of an id	leal gas is $(7/2)R$. The ratio	of specific heat at constant
	pressure to that at consta	nt volume is		
	a) 5/7	b) 9/7	c) 7/5	d) 8/7

103.		-		mperature of source is kept
	•	y raised to 60%, then the re	-	
	a) 100 K	b) 600 K	c) 400 K	d) 500 K
104.	-	g falls freely from a height o		_
	•	ted energy in this process is		-
	a) 0.01°C	b) 0.1°C	c) 1.1°C	d) 1°C
105.	The value of densities of t	two diatomic gases at const	ant temperature and pres	sure are d_1 and d_2 , then the
	ratio of speed of sound in	these gases will be		
	a) $d_1 d_2$	b) $\sqrt{d_2/d_1}$	c) $\sqrt{d_1/d_2}$	d) $\sqrt{d_1d_2}$
106.	The temperature at which	h protons in proton gas woi	uld have enough energy to	overcome. Coulomb barrier
	of $4.14 \times 10^{-14} J$ is (Boltz	man constant = 1.38×10^{-1}	$^{-23}JK^{-1}$)	
	a) $2 \times 10^9 K$,		d) $3 \times 10^9 K$
107.	The value of $\frac{pV}{T}$ for one	mole of an ideal gas is ne	arly equal to	
	a) $2 \text{ J mol}^{-1} \text{ K}^{-1}$	b) 8.3 J mol ⁻¹ K ⁻¹	c) 4.2 J mol ⁻¹ K ⁻¹	d) $2 \text{ cal mol}^{-1} \text{ K}^{-1}$
108.	Which one of the followin	ng is not an assumption of k	inetic theory of gases?	
	a) The volume occupied b	by the molecules of the gas	is negligible	
	-	between the molecules is n		
	c) The collision between			
	d) All molecules have sam			
109.	At 0 K which of the follow	ving properties of a gas will	be zero	
	a) Kinetic energy	b) Potential energy	c) Vibrational energy	d) Density
110.	A pressure <i>P</i> -absolute ter	nperature T diagram was o	btained when a given mas	ss of gas was heated. During
	the heating process from	the state 1 to state 2 the vo	lume	
	*			
	P			
	2	4		
		_		
	$ \begin{array}{c c} P & 2 \\ \hline 1 & 7 \end{array} $	TPILIS FDUC	ATION	
	a) Remained constant	b) Decreased	c) Increased	d) Changed erratically
111.		•	c) Increased	d) Changed erratically
111.	a) Remained constant	•	c) Increased b) If follows $PV = RT$	d) Changed erratically
111.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law	•	b) If follows $PV = RT$	
	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend	ment is not true	b) If follows $PV = RT$ d) It follows Vander-Waa	
	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend	ment is not true ds on temperature only	b) If follows $PV = RT$ d) It follows Vander-Waa	
112.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola	ment is not true ds on temperature only ure, graph between <i>P</i> and 1	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line	al's equation d) Circle
112.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend Under constant temperate a) Parabola A jar contains a gas and for temperature of jar is redu	ment is not true ds on temperature only ure, graph between <i>P</i> and 1 b) Hyperbola ew drops of water at <i>T K</i> . The	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line the pressure in the jar is 83 Vapour pressure of water a	al's equation d) Circle
112.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and fe temperature of jar is redu 30 mm and 25 mm of me	ment is not true ds on temperature only ure, graph between <i>P</i> and 1 b) Hyperbola ew drops of water at <i>T K</i> . The aced by 1%. The saturated we roury. Then the new pressu	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line the pressure in the jar is 83 vapour pressure of water a tre in the jar will be	al's equation d) Circle 80 mm of mercury. The at the two temperatures are
112. 113.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and fe temperature of jar is redu 30 mm and 25 mm of me a) 917 mm of Hg	ment is not true ds on temperature only ure, graph between <i>P</i> and 1 b) Hyperbola ew drops of water at <i>T K</i> . The uced by 1%. The saturated water in the new pressure bounders.	b) If follows $PV = RT$ d) It follows Vander-Waal/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a tre in the jar will be c) 817 mm of Hg	al's equation d) Circle 30 mm of mercury. The at the two temperatures are d) None of these
112. 113.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and fe temperature of jar is redu 30 mm and 25 mm of me a) 917 mm of Hg Three containers of the sa	ment is not true ds on temperature only ure, graph between <i>P</i> and 1 b) Hyperbola ew drops of water at <i>T K</i> . The uced by 1%. The saturated water in the new pressure b) 717 mm of Hg ame volume contain three contain three contains.	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line the pressure in the jar is 83 Vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses	al's equation d) Circle 30 mm of mercury. The at the two temperatures are d) None of these s of the molecules are
112. 113.	a) Remained constant For ideal gas, which state a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and for temperature of jar is redu 30 mm and 25 mm of me a) 917 mm of Hg Three containers of the sa m_1, m_2 and m_3 and the nu	ment is not true ds on temperature only ure, graph between <i>P</i> and 1 b) Hyperbola ew drops of water at <i>T K</i> . The uced by 1%. The saturated veroury. Then the new pressure b) 717 mm of Hg ame volume contain three comber of molecules in their	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses	al's equation d) Circle $80 \ mm$ of mercury. The at the two temperatures are d) None of these are N_1, N_2 and N_3 . The gas
112. 113.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and for temperature of jar is reduced as mm and mm and mm of mm and mm of mm and mm of mm and mm	ment is not true ds on temperature only ure, graph between P and 1 b) Hyperbola ew drops of water at T K . The saturated of the satura	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses	al's equation d) Circle 30 mm of mercury. The at the two temperatures are d) None of these s of the molecules are
112. 113.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and for temperature of jar is reduced as mm and mm and mm of mm and mm of mm of mm of mm and mm of mm of mm and the number containers. The pressure	ment is not true ds on temperature only ure, graph between P and 1 b) Hyperbola ew drops of water at T K . The saturated of the satura	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses respective containers are vely. All the gases are now	al's equation d) Circle $00 \ mm$ of mercury. The at the two temperatures are d) None of these s of the molecules are N_1, N_2 and N_3 . The gas mixed and put in one of the
112. 113.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and for temperature of jar is reduced as mm and mm and mm of mm and mm of mm of mm of mm and mm of mm of mm and the number containers. The pressure	ment is not true ds on temperature only ure, graph between P and 1 b) Hyperbola ew drops of water at T K . The saturated of the satura	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses respective containers are vely. All the gases are now	al's equation d) Circle $00 \ mm$ of mercury. The at the two temperatures are d) None of these s of the molecules are N_1, N_2 and N_3 . The gas mixed and put in one of the
112. 113. 114.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and for temperature of jar is reduced as mm and mm and mm of mm and mm of mm of mm of mm and mm of mm of mm and the number containers. The pressure	ment is not true ds on temperature only ure, graph between P and P b) Hyperbola ew drops of water at P P uced by P P when P when P and P are spective P of mixture will be b) $P = \frac{P_1 + P_2 + P_3}{3}$	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses respective containers are vely. All the gases are now	al's equation d) Circle $00 \ mm$ of mercury. The at the two temperatures are d) None of these s of the molecules are N_1, N_2 and N_3 . The gas mixed and put in one of the
112. 113. 114.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperate a) Parabola A jar contains a gas and fet temperature of jar is redu $30 \ mm$ and $25 \ mm$ of med a) $917 \ mm$ of Hg Three containers of the same m_1, m_2 and m_3 and the nupressure in the containers containers. The pressure a) $P < (P_1 + P_2 + P_3)$ A real gas behaves like	ment is not true ds on temperature only ure, graph between P and P b) Hyperbola ew drops of water at P and P uced by P and P and the new pressure of P b) P ame volume contain three of P ame volume contain three of P and P are properties are P and P are properties are P and P and P are properties are P and P and P are properties are P and P are properties are P and P and P are properties and P are prope	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 vapour pressure of water a are in the jar will be c) 817 mm of Hg different gases. The masses respective containers are vely. All the gases are now	al's equation d) Circle $00 \ mm$ of mercury. The at the two temperatures are d) None of these s of the molecules are N_1, N_2 and N_3 . The gas mixed and put in one of the d) $P > (P_1 + P_2 + P_3)$
112. 113. 114.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperat a) Parabola A jar contains a gas and for temperature of jar is reduced 30 mn and 25 mn of meror a) 917 mn of Hg Three containers of the sate m_1, m_2 and m_3 and the numbers of the containers. The pressure a) $P < (P_1 + P_2 + P_3)$ A real gas behaves like a) Pressure and temper	ment is not true ds on temperature only ure, graph between P and P b) Hyperbola ew drops of water at P at P uced by P . The saturated P rcury. Then the new pressurate of P ame volume contain three of molecules in their sare P	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 Vapour pressure of water a tre in the jar will be c) 817 mm of Hg different gases. The masses respective containers are vely. All the gases are now c) $P = P_1 + P_2 + P_3$	al's equation d) Circle $00 \ mm$ of mercury. The at the two temperatures are d) None of these sof the molecules are N_1, N_2 and N_3 . The gas mixed and put in one of the d) $P > (P_1 + P_2 + P_3)$
112.113.114.115.	a) Remained constant For ideal gas, which states a) It obeys Boyle's law c) Internal energy depend Under constant temperate a) Parabola A jar contains a gas and for temperature of jar is redu 30 mm and 25 mm of mer a) 917 mm of Hg Three containers of the sa m_1, m_2 and m_3 and the nupressure in the containers containers. The pressure a) $P < (P_1 + P_2 + P_3)$ A real gas behaves like a) Pressure and temper c) Pressure is high and	ment is not true ds on temperature only ure, graph between P and P b) Hyperbola ew drops of water at P at P uced by P . The saturated P rcury. Then the new pressurate of P ame volume contain three of molecules in their sare P	b) If follows $PV = RT$ d) It follows Vander-Waa L/V is c) Straight line he pressure in the jar is 83 Vapour pressure of water a are in the jar will be c) 817 mm of Hg different gases. The masses respective containers are vely. All the gases are now c) $P = P_1 + P_2 + P_3$ b) Pressure and tempe d) Pressure is low and	al's equation d) Circle $00 \ mm$ of mercury. The at the two temperatures are d) None of these s of the molecules are N_1, N_2 and N_3 . The gas mixed and put in one of the d) $P > (P_1 + P_2 + P_3)$ rature are both low temperature is high

	The temperature of a gi molecules increases	ven mass is increased fro	om 27°C to 327°C . The rr	ns velocity of the
	a) $\sqrt{2}$ times	b) 2 times	c) $2\sqrt{2}$ times	d) 4 times
118.	-	iven by	_	the molar specific heat at
	a) γ <i>R</i>	b) $\frac{(\gamma - 1)R}{\gamma}$	c) $\frac{R}{\gamma - 1}$	d) $\frac{\gamma R}{\gamma - 1}$
119.	A diatomic gas molecule ha) 1.67	as translational, rotational b) 1.4	and vibrational degrees of c) 1.29	freedom. The C_P/C_V is d) 1.33
120.	Universal gas constant i	S		
	C_p		L) C C	
	a) $\frac{C_p}{C_V}$		b) $c_p - c_V$	
	c) $C_P + C_V$		b) $C_p - C_V$ d) $\frac{C_V}{C_p}$	
121.	Which of the following sta	tements about kinetic theo	ory of gases is wrong	
	a) The molecules of a gas	are in continuous random	motion	
	b) The molecules continue	ously undergo inelastic coll	isions	
		nteract with each other exc		
	,	the molecules are of short		
122.	-	ratio of increase in volume		rise in kelvin temperature
		T = absolute temperature		22 4 4 2 2
400	a) T^2	b) T	c) 1/T	d) $1/T^2$
123.	The density (p) versus pr	essure (P) of a given mass	or an ideal gas is snown at	two temperatures T_1 and T_2
	T_2	C EDUC	ATTON	
	ρ	PLUS EDUC	AHON	
	Then relation between T_1	and T_2 may be		
	a) $T_1 > T_2$		b) $T_2 > T_1$	
	c) $T_1 = T_2$		-) -21	
124			d) All the three are possib	le
127.		. The pressure exerted b	d) All the three are possiby the gas is given by	le
	KE per unit volume is <i>E</i>	•	d) All the three are possiby the gas is given by	
	KE per unit volume is E a) $\frac{E}{3}$	b) $\frac{2E}{3}$	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$	d) $\frac{E}{2}$
	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he	•	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$	d) $\frac{E}{2}$
	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is	b) $\frac{2E}{3}$ ated at constant pressure t	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume	d) $\frac{E}{2}$ of gas at 27°C is V then
125.	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is a) V	b) $\frac{2E}{3}$ ated at constant pressure tb) 3 V	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume	d) $\frac{E}{2}$ of gas at 27°C is V then
125.	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is a) V Consider a collection of a	b) $\frac{2E}{3}$ ated at constant pressure t	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume c) 2 V ach with speed v . The directions	d) $\frac{E}{2}$ of gas at 27°C is V then d) $V/2$ ction of velocity is
125.	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is a) V Consider a collection of a randomly distributed in the	b) $\frac{2E}{3}$ ated at constant pressure t b) 3 V large number of particles e	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume c) 2 V ach with speed v . The directions	d) $\frac{E}{2}$ of gas at 27°C is V then d) $V/2$ ction of velocity is
125. 126.	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is a) V Consider a collection of a randomly distributed in the collection a) $2V/\pi$	b) $\frac{2E}{3}$ ated at constant pressure to b) 3 V large number of particles ene collection. What is the material of the second collection is the material of the second collection.	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume c) 2 V ach with speed v . The direction agnitude of the relative velocity $8V/\pi$	d) $\frac{E}{2}$ of gas at 27°C is V then d) $V/2$ ction of velocity is locity between a pairs in
125. 126. 127.	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is a) V Consider a collection of a randomly distributed in the collection a) $2V/\pi$ If temperature of gas increa) Double	b) $\frac{2E}{3}$ ated at constant pressure to b) 3 V large number of particles ene collection. What is the model b) V/π eases from 27°C to 927°C to 910 b) Half	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume c) 2 V ach with speed v . The direction agnitude of the relative velocity $8V/\pi$	d) $\frac{E}{2}$ of gas at 27°C is V then d) $V/2$ ction of velocity is locity between a pairs in
125. 126. 127.	KE per unit volume is E a) $\frac{E}{3}$ A perfect gas at 27°C is he volume at 327°C is a) V Consider a collection of a randomly distributed in the collection a) $2V/\pi$ If temperature of gas increases	b) $\frac{2E}{3}$ ated at constant pressure to b) 3 V large number of particles ene collection. What is the model b) V/π eases from 27°C to 927°C to 910 b) Half	d) All the three are possibly the gas is given by c) $\frac{3E}{2}$ o 327°C. If original volume c) 2 V ach with speed v . The direction agnitude of the relative verse $(3V/\pi)$ the $(3V/\pi)$ are $(3V/\pi)$ are $(3V/\pi)$ are $(3V/\pi)$	d) $\frac{E}{2}$ of gas at 27°C is V then d) $V/2$ ction of velocity is locity between a pairs in d) $4V/\pi$

	-	-	volume is changed from appacity of the gas at cons	
	a) 8	b) 4	c) 0.8	d) 0.4
130	Molecular motion shows i		c) 0.0	u) 0,1
150.	a) Temperature	b) Internal Energy	c) Friction	d) Viscosity
131.	•		ssure of the gas be effected	•
101.	molecules is made $2n$	or a gasi from will the pre	source or the gas so enected	, in the number of
	a) Pressure will decrease		b) Pressure will remain un	nchanged
	c) Pressure will be double	ed	d) Pressure will become the	hree times
132.	Root mean square velocity	γ of a particle is v at pressu	re P. If pressure is increase	ed two times, then the
	<i>r.m.s.</i> velocity becomes			
	a) 2 <i>v</i>	b) 3 <i>v</i>	c) 0.5 <i>v</i>	d) <i>v</i>
133.			−10°C into steam at 100°C	
	a) 6400	b) 5400	c) 7200	d) 7250
134.			ater vapour. The air pres	-
	saturated vapour pressi	are of water is $ar{p}.$ If the m	ixture is compressed to o	one half of its volume by
	maintaining temperatur	e constant, the pressure	becomes	
	a) $2(p + \bar{p})$	b) $(2p + \overline{p})$	c) $(p + \bar{p}/2)$	d) $p + 2\bar{p}$
135.	A container with insulat	ing walls is divided into	two equal parts by a part	tition fitted with a value.
	One part is filled with an	n ideal gas at a pressure į	p and temperature T , wh	ereas the other part is
	completely evacuated. I	f the valve is suddenly or	ened, the pressure and t	emperature of the gas
	will be			
	a) $\frac{p}{2}$, T	p T	. <i>T</i>	T
	a) $\frac{1}{2}$, I	b) $\frac{p}{2}$, $\frac{T}{2}$	c) <i>p</i> , <i>T</i>	d) $p, \frac{T}{2}$
136.	The mean kinetic energ	v of one male of goe non	degree of freedom (on th	a basis of lringtisth come
	The mean kinetic cherg.	y of one mole of gas per d	regree of freedom (on the	e basis of killetic theory
			A TIESTEL	e basis of killetic theory
			A TIESTEL	
- •			c) $\frac{3}{2} R T$	d) $\frac{1}{2} R T$
	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number)	b) $\frac{3}{2} k T$ egrees of freedom has a me	c) $\frac{3}{2}$ R T ean energy per molecule give	d) $\frac{1}{2} R T$ Ven by
	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number)	b) $\frac{3}{2} k T$ egrees of freedom has a me	c) $\frac{3}{2}$ R T ean energy per molecule give	d) $\frac{1}{2} R T$ Ven by
137.	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$	b) $\frac{3}{2} k T$ egrees of freedom has a metal b) $\frac{nkT}{2N}$	c) $\frac{3}{2}RT$ ean energy per molecule gives c) $\frac{nkT}{2}$	d) $\frac{1}{2}RT$ Ven by $d) \frac{3kT}{2}$
137.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an au	b) $\frac{3}{2} k T$ egrees of freedom has a me b) $\frac{nkT}{2N}$ atomobile tube upto a pr	c) $\frac{3}{2}RT$ ean energy per molecule gives $\frac{nkT}{2}$ essure of 200 kPa in the	d) $\frac{1}{2} R T$ ven by d) $\frac{3kT}{2}$ morning when the air
137.	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Du	b) $\frac{3}{2} kT$ egrees of freedom has a me b) $\frac{nkT}{2N}$ atomobile tube upto a pring the day, temperature	c) $\frac{3}{2}$ R T ean energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the tu	d) $\frac{1}{2} R T$ ven by d) $\frac{3kT}{2}$ morning when the air
137.	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Du	b) $\frac{3}{2} kT$ egrees of freedom has a me b) $\frac{nkT}{2N}$ atomobile tube upto a prining the day, temperature tube at this temperature	c) $\frac{3}{2}$ R T ean energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the tu	d) $\frac{1}{2} R T$ ven by d) $\frac{3kT}{2}$ morning when the air
137.	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Du	b) $\frac{3}{2} kT$ egrees of freedom has a me b) $\frac{nkT}{2N}$ atomobile tube upto a pring the day, temperature	c) $\frac{3}{2}$ R T ean energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the tu	d) $\frac{1}{2} R T$ ven by d) $\frac{3kT}{2}$ morning when the air
137. 138.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa	b) $\frac{3}{2} k T$ egrees of freedom has a me b) $\frac{nkT}{2N}$ utomobile tube upto a pring the day, temperature tube at this temperature b) 209 kPa	c) $\frac{3}{2}$ R T can energy per molecule gives: c) $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the ture, will be approximately	d) $\frac{1}{2}RT$ ven by d) $\frac{3kT}{2}$ morning when the air libe expands by 2%. The d) 200 kPa
137. 138.	of gases) is a) $\frac{1}{2} k T$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ atomobile tube upto a pring the day, temperature tube at this temperature b) 209 kPa	c) $\frac{3}{2}$ R T ean energy per molecule gives $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the two e, will be approximately c) 206 kPa	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air ube expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th
137. 138.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature of the gas is released from pressure of the gas is	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ atomobile tube upto a prining the day, temperature tube at this temperature b) 209 kPa ature of an ideal gas in a closure of the vessel and the temperature of the vessel and the temperature.	c) $\frac{3}{2}$ R T ean energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the ture, will be approximately c) 206 kPa essed vessel are 720 kPa and atture of the remaining gas	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air abe expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th is raised to 353°C, the final
137. 138. 139.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature of the gas is released from pressure of the gas is a) 1440 kPa	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ atomobile tube upto a prining the day, temperature tube at this temperature b) 209 kPa ature of an ideal gas in a closure the vessel and the temperature b) 1080 kPa	c) $\frac{3}{2}$ R T can energy per molecule gives $\frac{nkT}{2}$ essure of 200 kPa in the region of 200 kPa in the region of 200 kPa and the turn of 200 kPa and the region of 200 kPa and ature of the remaining gas at c) 720 kPa	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air ube expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th is raised to 353°C, the final d) 540 kPa
137. 138. 139.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature of the gas is released from pressure of the gas is a) 1440 kPa	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ atomobile tube upto a prining the day, temperature tube at this temperature b) 209 kPa ature of an ideal gas in a closure the vessel and the temperature b) 1080 kPa	c) $\frac{3}{2}$ R T ean energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the re rises to 42°C and the ture, will be approximately c) 206 kPa essed vessel are 720 kPa and atture of the remaining gas	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air ube expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th is raised to 353°C, the final d) 540 kPa
137. 138. 139.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature of the gas is released from pressure of the gas is a) 1440 kPa Two spheres made of same	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ atomobile tube upto a prining the day, temperature tube at this temperature b) 209 kPa ature of an ideal gas in a closure the vessel and the temperature b) 1080 kPa	c) $\frac{3}{2}$ R T can energy per molecule gives $\frac{nkT}{2}$ essure of 200 kPa in the region of 200 kPa in the region of 200 kPa and the turn of 200 kPa and the region of 200 kPa and ature of the remaining gas at c) 720 kPa	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air ube expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th is raised to 353°C, the final d) 540 kPa
137. 138. 139.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature of the gas is released from pressure of the gas is a) 1440 kPa Two spheres made of samuratio of a) 1:2 A cylinder of 5 $litre$ capacity	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ utomobile tube upto a pring the day, temperature tube at this temperature b) 209 kPa at the vessel and the temperature b) 1080 kPa e substance have diameter b) 1:8 ity, filled with air at N.T.P.	c) $\frac{3}{2}$ R T can energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the region of the approximately c) 206 kPa essed vessel are 720 kPa and atture of the remaining gas are $\frac{1}{2}$ in the ratio 1: 2. Their the region of the remaining connected with another $\frac{1}{2}$ is connected with another $\frac{1}{2}$	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air ube expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th is raised to 353°C, the final d) 540 kPa ermal capacities are in the
137. 138. 139.	of gases) is a) $\frac{1}{2} kT$ A polyatomic gas with n d (N is Avogadro's number) a) $\frac{nkT}{N}$ Air is pumped into an autemperature is 22°C. Dupressure of the air in the a) 212 kPa The pressure and temperature of the gas is released from pressure of the gas is a) 1440 kPa Two spheres made of samuratio of a) 1:2 A cylinder of 5 $litre$ capacity	b) $\frac{3}{2} kT$ egrees of freedom has a meaning b) $\frac{nkT}{2N}$ atomobile tube upto a pring the day, temperature tube at this temperature b) 209 kPa ature of an ideal gas in a closure the vessel and the temperature b) $1080 kPa$ e substance have diameter b) $1:8$	c) $\frac{3}{2}$ R T can energy per molecule give c) $\frac{nkT}{2}$ essure of 200 kPa in the region of the approximately c) 206 kPa essed vessel are 720 kPa and atture of the remaining gas are $\frac{1}{2}$ in the ratio 1: 2. Their the region of the remaining connected with another $\frac{1}{2}$ is connected with another $\frac{1}{2}$	d) $\frac{1}{2}$ R T ven by d) $\frac{3kT}{2}$ morning when the air ube expands by 2%. The d) 200 kPa d 40°C respectively. If $\frac{1}{4}$ th is raised to 353°C, the final d) 540 kPa ermal capacities are in the

142. The <i>r. m. s</i>	, speed of the mole	ecules of a gas ill a vesser	is too his . If half of the §	gas leaks out, at constant
temperatı	ire, the r . m . s . spee	ed of the remaining mole	cules will be	
a) 800 ms	b)	$1400\sqrt{2} \ ms^{-1}$	c) $400 \ ms^{-1}$	d) $200 \ ms^{-1}$
143. The tempe	erature gradient in	the earth's crust is 32°C	${\rm km}^{-1}$ and the mean condu	ctivity of earth is 0,008
cals ⁻¹ cm ⁻	¹°C ^{−1} Considering	g earth to be a sphere of r	radius 6000 km loss of hea	t by earth everyday is
about		•		
a) 10 ³⁰ ca	l b)	10 ⁴⁰ cal	c) 10 ²⁰ cal	d) 10 ¹⁸ cal
144. Boyle's lav	w holds for an idea	l gas during		
a) Isobari	c changes b)	Isothermal changes	c) Isochoric changes	d) Isotonic changes
	If the same gas is h		the temperature by 10 <i>K</i> we to raise the temperature	hen heated at constant by the same 10 <i>K</i> , the heat
(Given the	gas constant $R =$			
a) 198.7 <i>J</i>	-		c) 215.3 <i>J</i>	d) 124 <i>J</i>
-	9	-	-	The total heat supplied to
the gas is a a) 60% ar			energies. Their respective c) 50% and 50%	d) 100% and 0%
-	-		t of the molecules of an ide	
temperati		ansiation motion, or most	t of the molecules of all fue	ai gas at absolute
a) <i>kT</i>		k/T	c) T/k	d) 1/kT
-		•	are <i>P</i> and <i>V</i> respectively. It	, ,
_		e becomes $V/2$, the final p		•
a) More tł			c) 2 <i>P</i>	d) 4P
149. A solid wh	iose volume does n	ot change with temperat	ture floats in liquid. For tw	o different
_			me of solid remain submer	ged. What is the coefficient
of volume	expansion of liquid	d?		
C				
$f_1 - f_2$	<u>2</u> h)	$f_1 - f_2$	$f_1 + f_2$	$f_1 + f_2$
$a) \frac{f_1 - f_2}{f_2 t_1 - f_2}$	$\frac{\frac{c_2}{2}}{c_1t_2}$ b)	$\frac{f_1 - f_2}{f_1 t_1 - f_2 t_2}$	c) $\frac{f_1 + f_2}{f_2 t_1 - f_1 t_2}$	d) $\frac{f_1 + f_2}{f_1 t_1 - f_2 t_2}$
a) $\frac{f_1 - f_2}{f_2 t_1 - f_2}$ 150. At temper	$\frac{r_1^2}{r_1t_2}$ b) ature T , the r . m . s .	$\frac{f_1 - f_2}{f_1 t_1 - f_2 t_2}$ speed of helium molecul	c) $\frac{f_1 + f_2}{f_2 t_1 - f_1 t_2}$ les is the same as $r. m. s.$ sp	d) $\frac{f_1 + f_2}{f_1 t_1 - f_2 t_2}$ beed of hydrogen
150. At temper	ature T , the r , m , s ,	$\frac{f_1 - f_2}{f_1 t_1 - f_2 t_2}$ speed of helium moleculature and pressure. The value	les is the same as r , m , s , sp	d) $\frac{f_1 + f_2}{f_1 t_1 - f_2 t_2}$ beed of hydrogen
150. At temper molecules a) 273°C	ature <i>T</i> , the <i>r.m.s.</i> at normal temperable b)	, speed of helium molecul ature and pressure. The v) 546°C	les is the same as <i>r.m.s.</i> sp value of <i>T</i> is c) 0°C	d) 136.5°C
molecules a) 273°C 151. Let A and	ature T , the r , m . s . at normal temperable b) B the two gases an	ature and pressure. The value of the value	les is the same as <i>r.m.s.</i> sp value of <i>T</i> is c) 0°C re <i>T</i> is the temperature and	beed of hydrogen
molecules a) 273°C 151. Let A and	ature T , the r , m . s . at normal temperable b) B the two gases an	, speed of helium molecul ature and pressure. The v) 546°C	les is the same as <i>r.m.s.</i> sp value of <i>T</i> is c) 0°C re <i>T</i> is the temperature and	d) 136.5°C
molecules a) 273°C 151. Let A and	ature T , the r , m . s . at normal temperable b) B the two gases an	ature and pressure. The value of the sum of	les is the same as <i>r.m.s.</i> sp value of <i>T</i> is c) 0°C re <i>T</i> is the temperature and	d) 136.5°C
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2	ature <i>T</i> , the <i>r.m.s.</i> at normal temperable b) <i>B</i> the two gases and the <i>r.m.s.</i> speed,	aspeed of helium moleculature and pressure. The value of the sum	les is the same as $r.m.s.$ spalue of T is c) 0° C re T is the temperature and equal to	d) 136.5° C d M is molecular mass. If C_A
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temp	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas o	aspeed of helium moleculature and pressure. The value of the sure	les is the same as $r.m.s.$ speak and $r.m.s.$ speak are $r.m.s.$ spe	d) 136.5° C d M is molecular mass. If C_A d) 0.5 increases by 1° C when
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temp	ature <i>T</i> , the <i>r.m.s.</i> at normal temperable b) B the two gases and the <i>r.m.s.</i> speed, b) perature of a gas oure of the gas is in	ature and pressure. The value of the following states and pressure. The value of the following states are supported by the following states of the fo	les is the same as r.m.s. sp value of T is c) 0°C re T is the temperature and equal to c) 1 essel of constant volume	d) 136.5° C d M is molecular mass. If C_A d) 0.5 increases by 1° C when
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temper the press a) 100 K	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas oure of the gas is in b)	aspeed of helium moleculature and pressure. The value of the sure is $\frac{T_B}{M_A} = 4 \cdot \frac{T_B}{M_B}$; when then the ratio $\frac{C_A}{C_B}$ will be contained in a closed vencreased by 1%. The in 273°C	les is the same as r.m.s. sp value of T is c) 0°C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temper the press a) 100 K 153. In Boyle's	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains	aspeed of helium moleculature and pressure. The value of the sure is $\frac{T_B}{M_A} = 4 \cdot \frac{T_B}{M_B}$; when then the ratio $\frac{C_A}{C_B}$ will be contained in a closed vencreased by 1%. The in 273°C constant	les is the same as r.m.s. spyalue of T is c) 0°C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100°C	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temper the press a) 100 K	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains	aspeed of helium moleculature and pressure. The value of the sure is $\frac{T_B}{M_A} = 4 \cdot \frac{T_B}{M_B}$; when then the ratio $\frac{C_A}{C_B}$ will be contained in a closed vencreased by 1%. The in 273°C constant	les is the same as r.m.s. sp value of T is c) 0°C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b)	aspeed of helium moleculature and pressure. The value of the sure is $\frac{7B}{M_A} = 4 \cdot \frac{7B}{M_B}$; when then the ratio $\frac{C_A}{C_B}$ will be contained in a closed vertice of the increased by 1%. The increased by 1% on the incre	les is the same as r.m.s. spyalue of T is c) 0°C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100°C	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K
150. At temper molecules a) 273° C 151. Let A and and C_B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same ma	ature and pressure. The value of the following states and pressure. The value of $\frac{T_B}{M_A} = 4 \cdot \frac{T_B}{M_B}$; when then the ratio $\frac{C_A}{C_B}$ will be contained in a closed vencreased by 1%. The in $\frac{1}{273}$ °C constant $\frac{1}{3}$ with the ratio of $\frac{1}{3}$ contained in a closed vencreased by 1%. The in $\frac{1}{3}$ constant $\frac{1}{3}$ with the ratio of $\frac{1}{3}$ constant $\frac{1}{3}$ with the ratio of $\frac{1}{3}$ with t	les is the same as $r.m.s.$ speaker of T is c) 0°C re T is the temperature and equal to c) 1 essel of constant volume witial temperature of the c) T	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.
150. At temper molecules a) 273°C 151. Let A and and C _B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod Each rod i	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same ma	ature and pressure. The value of the following states and pressure. The value of the following states are the following states of the following state	les is the same as $r.m.s.$ spyalue of T is c) 0° C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100° C c) $\frac{V}{T}$ eross-section have been join	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.
150. At temper molecules a) 273°C 151. Let A and and C _B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod Each rod i	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases an e the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same mas s of same length. T	ature and pressure. The value of the following states and pressure. The value of the following states are the following states of the following state	les is the same as $r.m.s.$ spyalue of T is c) 0° C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100° C c) $\frac{V}{T}$ eross-section have been join	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.
150. At temper molecules a) 273°C 151. Let A and and C _B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod Each rod i	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases and the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same mans s of same length. The	ature and pressure. The value of the following states and pressure. The value of the following states are the following states of the following state	les is the same as $r.m.s.$ spyalue of T is c) 0° C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100° C c) $\frac{V}{T}$ eross-section have been join	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.
150. At temper molecules a) 273°C 151. Let A and and C _B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod Each rod i of the junc	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases and the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same mans s of same length. The	ature and pressure. The value of the following states and pressure. The value of the following states are the following states of the following state	les is the same as $r.m.s.$ spyalue of T is c) 0° C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100° C c) $\frac{V}{T}$ eross-section have been join	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.
150. At temper molecules a) 273°C 151. Let A and and C _B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod Each rod i	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases and the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same mans s of same length. The	ature and pressure. The value of the following states and pressure. The value of the following states are the following states of the following state	les is the same as $r.m.s.$ spyalue of T is c) 0° C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100° C c) $\frac{V}{T}$ eross-section have been join	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.
150. At temper molecules a) 273°C 151. Let A and and C _B are a) 2 152. The temper the press a) 100 K 153. In Boyle's a) PV 154. Three rod Each rod i of the junc	ature <i>T</i> , the <i>r.m.s.</i> at normal tempera b) <i>B</i> the two gases and the <i>r.m.s.</i> speed, b) erature of a gas of ure of the gas is in b) law what remains b) s made of same mans s of same length. The	ature and pressure. The value of the following states and pressure. The value of the following states are the following states of the following state	les is the same as $r.m.s.$ spyalue of T is c) 0° C re T is the temperature and equal to c) 1 essel of constant volume nitial temperature of the c) 100° C c) $\frac{V}{T}$ eross-section have been join	d) 136.5°C d M is molecular mass. If C_A d) 0.5 increases by 1°C when gas is d) 200 K d) $\frac{P}{T}$ ned as shown in figure.

155.	The degrees of freedom of a n	nolecule of a triator	mic gas are	
	a) 2 b) 4		c) 6	d) 8
156.	A gaseous mixture contains equameasurements on this mixture a heats) for this mixture is	it temperatures belov	w 100 K would indicate tha	at the of γ (ratio specific
1 - 7	a) 3/2 b) 4/		c) 5/3	d) 7/5
157.	A sealed container with negligib gas). When it is heated from 300 a) Halved			
	c) Doubled		d) Increased by factor $\sqrt{2}$	
	Equation of gas in terms of press	, ,	• • • • • • • • • • • • • • • • • • • •	
	a) $\frac{P_1}{T_1 d_1} = \frac{P_2}{T_2 d_2}$ b) $\frac{P_1}{d}$	$\frac{T_1}{T_2} = \frac{P_2 T_2}{T_2}$	c) $\frac{P_1 d_2}{R_1} = \frac{P_2 d_1}{R_2}$	d) $\frac{P_1 d_1}{R} = \frac{P_2 d_2}{R}$
159.	Three perfect gases at absolu	_		
	m_1, m_2 and m_3 and the number		n_1, n_2 and n_3 respective	y. Assuming no loss of
	energy, the final temperature	of the mixture is	2 2	2
	a) $\frac{n_1T_1 + n_2T_2 + n_3T_3}{n_1 + n_2 + n_3}$		b) $\frac{n_1 T_1^2 + n_2 T_2^2 + n_3 T_3}{n_1 T_1 + n_2 T_2 + n_3 T_3}$	_
	c) $\frac{n_1^2 T_1^2 + n_2^2 T_2^2 + n_3^2 T_3^2}{n_1 T_1 + n_2 T_2 + n_3 T_3}$		d) $\frac{T_1 + T_2 + T_3}{3}$	
	Air is filled in a bottle at atmosp	heric pressure and it	is corked at 35°C. If the co	rk can come out at 3
1001	atmospheric pressure than upto			
	a) 325.5°C b) 85	1°C	c) 651°C	d) None of these
161.	One mole of monoatomic gas			
	molar specific heat (in J K^{-1} r			
			c) 19.2	d) None of these
162.	The kinetic energy of translation			
	8.3 <i>J</i> / <i>mol</i> / <i>K</i>)	r or no g or only gen un		, 80 0 = 9, 0
		90 ergs	c) 830 joules	d) 124.5 <i>joules</i>
163.	If a Vander-Waal's gas expands	•	perature is	
	a) Less than the initial temperat			
	b) Equal to the initial temperatu			
	c) More than the initial tempera		ing on the nature of the goo	
164	d) Less or more than the initial t To what temperature should the	• •		
104.	that the R.M.S. velocity of its mo			eu at constant pressure so
	a) 1200°C b) 92		c) 600°C	d) 108°C
165.	Suppose ideal gas equation follo			,
	respectively. If gas expands to 2			<i>G</i>
	a) T b) 9T	=	c) 27 T	d) T/9
166.	The temperature of the hydroge	n at which the avera	ge speed of its molecules is	equal to that of oxygen
	molecules at a temperature of 3	1°C, is		
	a) -216°C b) -2		c) -254°C	d) -264°C
167.	An air bubble of volume $1.0 cm^3$ volume of the bubble when it re			
	a) 5.4 cm ³ b) 4.9	9 cm ³	c) $2.0 \ cm^3$	d) $10.0 \ cm^3$

168. A mixture of 2 moles of helium gas (atomic mass = 4 amu), and 1 mole of argon gas (atomic mass = 40*amu*) is kept at 300*K* in a container. The ratio of the *rms* speeds $\left[\frac{V_{rms}(\text{helium})}{V_{rms}(\text{argon})}\right]$ is c) 2.24 a) 0.32 b) 0.45 d) 3.16 169. The value of the gas constant (R) calculated from the perfect gas equation is 8.32 joules/g mole K, whereas its value calculated from the knowledge of C_P and C_V of the gas is 1.98 cal/g mole K. From this data, the value of I is a) 4.16 *[/cal* b) 4.18 *J/cal* c) 4.20 *[/cal* 170. A gas mixture consists of molecules of type 1,2 and 3, with molar masses $m_1 > m_2 > m_3$. V_{rms} and \overline{K} are the r.m.s. speed and average kinetic energy of the gases. Which of the following is true a) $(V_{rms})_1 < (V_{rms})_2 < (V_{rms})_3$ and $(\overline{K})_1 = (\overline{K})_2 = (\overline{K}_3)$ b) $(V_{rms})_1 = (V_{rms})_2 \le (V_{rms})_3$ and $(\overline{K})_1 = (\overline{K})_2 > (\overline{K})_3$ c) $(V_{rms})_1 > (V_{rms})_2 < (V_{rms})_3$ and $(\overline{K})_1 < (\overline{K})_2 > (\overline{K}_3)$ d) $(V_{rms})_1 > (V_{rms})_2 > (V_{rms})_3$ and $(\overline{K})_1 < (\overline{K})_2 < (\overline{K})_3$ 171. The following sets of values for C_V and C_P of a gas has been reported by different students. The units are *cal/g-mole-K*. Which of these sets is most reliable a) $C_V = 3$, $C_P = 5$ b) $C_V = 4$, $C_P = 6$ c) $C_V = 3$, $C_P = 2$ d) $C_V = 3$, $C_P = 4.2$ 172. At constant temperature on increasing the pressure of a gas by 5% its volume will decrease by b) 5.26% c) 4.26% 173. When the temperature of a gas increases by 1°C, its pressure increases 0.4%. What is its initial temperature? b) 125 K a) 250 K c) 195 K d) 329 K 174. A balloon contains $500m^3$ of helium at 27° C and 1 atmosphere pressure. The volume of the helium at -3° C temperature and 0.5 atmosphere pressure will be a) $500 m^3$ b) $700 \, m^3$ c) $900 \, m^3$ d) $1000 m^3$

175. A vessel is partitioned in two equal halves by a fixed diathermic separator. Two different ideal gases are filled in left (L) and right (R) halves. The rms speed of the molecules in L part is equal to the mean speed of molecules in the R part. Then the ratio of the mass of a molecule in L part to that of a molecule in R part

d) $3\pi/8$

176. Mean kinetic energy per degree of freedom of gas molecules is

c) $\frac{1}{2}kT$

177. The specific heat relation for ideal gas is

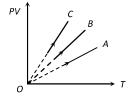
a) $C_P + C_V = R$

b) $C_P - C_V = R$

c) $C_P/C_V = R$

d) $C_V/C_P = R$

178. PV versus T graph of equal masses of H_2 , He and O_2 is shown in fig. Choose the correct alternative



a) C corresponds to H_2 , B to He and A to O_2

b) A corresponds to He, B to H_2 and C to O_2

c) A corresponds to He, B to O_2 and C to H_2

d) A corresponds to O_2 , B to H_2 and C to He

179	70 cal of heat are required	d to raise the temperature (of 2 mole of an ideal gas at	constant pressure from	
	30°C to 35°C . The amount of heat required to raise the temperature of the same sample of the gas through				
		nt volume is nearly (Gas coi			
	a) 30 cal	b) 50 cal	c) 70 cal	d) 90 cal	
180	If the internal energy of n hydrogen at temperature	$_1$ moles of He at temperatu 6 T. the ratio of $\frac{n_1}{n_2}$ is	re 10 T is equal to the inter	rnal energy of n_2 mole of	
	a) $\frac{3}{5}$	b) 2	c) 1	d) $\frac{5}{3}$	
181.	induced by passing electr	moles) of hydrogen and 96 ic spark in the vessel till on ng value 273 <i>K</i> . The pressu	e of the gases is consumed		
	H_2 O_2 Sp				
	a) 0.1 atm	b) 0.2 atm	c) 0.3 atm	d) 0.4 atm	
182.	-	= = =	-	the atmospheric pressure.	
		times its initial volume, th	-		
102	a) 100°C	b) 173°C	c) 273°C	d) -173°C	
103		ute temperature and v_{rms}^2 is $ b \rangle v ^2_{rms} \uparrow $		d) , , ,	
	a) v ² _{rms}	D) V*ms	c) v ² ms	d) v ² _{rms}	
	Ť	T	Ť	Ť	
184	120	nperature of an ideal gas ar	$e\ V, P\ and\ T\ respectively.$ If	f mass of its molecule is m ,	
	then its density is $[k = bc]$	מ	CATION	Dana	
	a) mkT	b) $\frac{r}{kT}$	c) $\frac{P}{kTV}$	d) $\frac{Pm}{kT}$	
185.	A vessel of volume 4 L co	ntains a mixture of 8 g of ox		Λ1	
	27°C. The pressure exerte		-, 6, 6 6	8	
	•	b) $6.79 \times 10^5 \mathrm{Nm}^{-2}$	c) $7.79 \times 10^3 \text{ Nm}^{-2}$	d) $7.79 \times 10^5 \text{ Nm}^{-2}$	
186		nolecule is $2.94 \times 10^{-10} m$.			
	a) 3.2	b) 16	c) 32×10^{-4}	d) 32×10^{-6}	
187	•	•	tements regarding elastic c	ollisions of the molecules is	
	wrong	_	0 0		
	a) Kinetic energy is lost in				
	b) Kinetic energy remains				
	c) Momentum is conserve				
100	_	nains constant in collisions		64 0 1111 11	
188	9	O_2 and N_2 are 32 and 28 re	· ·	essure of 1 g O_2 will be the	
		the same bottle at the temp		1) 5 6 400	
100	a) -21°C	b) 13°C	c) 15°C	d) 56.4°C	
189	==	of a gas at 300 <i>K</i> is 100 <i>J</i> . T		-	
100	a) 100 J	b) 3000 <i>J</i>	c) 450 <i>J</i>	d) 150 <i>J</i>	
170		catomic gas requires 210 <i>j</i> che same gas is heated at co		are by $10K$, when heated at temperature by $10K$ then	
	a) 238 <i>J</i>	b) 126 <i>J</i>	c) 210 <i>J</i>	d) 350 <i>J</i>	

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191.	-	-	at a given temperature is	s 9: 8. The ratio of the rms
	velocities of their mole			
	a) $3: 2\sqrt{2}$	b) $2\sqrt{2}$: 3	c) 9:8	d) 8: 9
192.	-			735 mm of mercury. If the
			the pressure of dry gas is	
	a) 760 mm	b) 758.8 <i>mm</i>	c) 710.8 mm	d) 711.2 <i>mm</i>
193.	become double, then pres	ssure will be		³ . If temperature and volume
	a) $10^5 N/m^2$		c) $0.5 \times 10^5 N/m^2$	
194.	temperature is filled in a temperature	vessel of 1 <i>litre</i> volume. V	-	sure of mixture at the same
	a) 0.140 atmosphere	b) 0.120 atmosphere	-	d) 0.212 atmosphere
195.	V_e = escape velocity)			e velocity of molecules and
196.	a) $C_{rms} << V_e$ The kinetic energy per g	<i>mol</i> for a diatomic gas at i	c) $C_{rms} = V_e$ room temperature is	d) $C_{rms} = 0$ d) $\frac{1}{2}RT$
	a) 3 <i>RT</i>	b) $\frac{5}{2}RT$	c) $\frac{3}{2}RT$	d) $\frac{1}{2}RT$
197.	In the adjoining figure, va	rious isothermals are sho	wn for a real gas. Then	
	(0,0) a) EF represents liquificate. c) HI represents the critical conditions and the conditions are considered as EF and EF represents the critical conditions.		b) <i>CB</i> represents liquifi d) <i>AB</i> represents gas at	
198.	•	-	ecules are moving in hor	
	uniform acceleration. N	leglecting acceleration of	due to gravity, the press	are inside the container is
	a) Uniform everywhere		b) Less in the front	
	c) Less at the back		d) Less at the top	
199.	The rate of diffusion is			
	a) Faster in solids than in	liquids and gases	b) Faster in liquids than	n in solids and gases
	c) Equal to solids, liquids	and gases	d) Faster in gases than	in liquids and solids
200.	r.m.s. velocity of nitroge	n molecules at NTP is		
	a) 492 <i>m/s</i>	b) 517 <i>m/s</i>	c) 546 <i>m/s</i>	d) 33 <i>m/s</i>
201.	100°C at constant pressur	re. The amount of heat de	livered will be	gen is increased from 0°C to
202	a) 600 <i>cal</i>	b) 1200 <i>cal</i>	c) 1800 <i>cal</i>	d) 3600 <i>cal</i>
	Relationship between P , I a) $P = \frac{3}{2}EV$	b) $V = \frac{2}{3}EP$	c) $PV = \frac{3}{2}E$	d) $PV = \frac{2}{3}E$

203. What is an ideal gas?

- a) One that consists of molecules
- b) A gas satisfying the assumptions of kinetic theory
- c) A gas having Maxwellian distribution of speed d) A gas consisting of massless particles 204. At 0°C the density of a fixed mass of a gas divided by pressure is x. At 100°C, the ratio will be

		. 273	373	, 100
	a) <i>x</i>	b) $\frac{273}{373}x$	c) $\frac{1}{273}x$	d) $\frac{100}{273}x$
205.	A gas is allowed to expand	l isothermally. The root me	ean square velocity of the m	nolecules
	a) Will increase		b) Will decrease	
	c) Will remain unchanged		d) Depends on the other f	
			the safety value of the cool	
			of the air, inside the cooker	
	a) 90°C	b) 636°C	c) 909°C	d) 363°C
		s $V_{rms} = 1840 m/s$ and its	density $\rho = 8.99 \times 10^{-2} kg$	g/m^3 , the pressure of the
	gas will be a) $1.01 N/m^2$	h) 1.01 \times 10 ³ N/ m^2	c) $1.01 \times 10^5 N/m^2$	d) $1.01 \times 10^7 N/m^2$
	The average kinetic energy		· · · · · · · · · · · · · · · · · · ·	aj 1.01 × 10 11/11
		b) A few <i>keV</i>	c) 50 – 60 <i>eV</i>	d) 13 6 eV
			thout any change in temper	=
	will be	toosea to han is volume wi	enout any ename in temper	action the pressure
		b) Halved	c) The same	d) Zero
	•		pecific heats of gases C_P/C_V	,
	a) 1.66	b) 1.40	c) 1.33	d) 1.00
	The average kinetic ener	•	,	,
	a) Proportional to press		b) Inversely proportion	al to volume of gas
	c) Inversely proportiona	0		to absolute temperature
	temperature of gas		of gas	r
212.	•	and decide which is/are c	orrect on the basis of kinet	ic theory of gases
		e at absolute temperature i		ite theory of gases
		ent gases are same at sam		
		eal gas kinetic energy is sa		
		_	rgy is same at same temper	
	a) All are correctSimple behaviour under al	b) I and IV are correct		d) None of these
	-	ii conditions of real gas is g		
	a) $Pv = \mu RT$		b) $\left(P + \frac{a}{v^2}\right)(v - b) = \mu R$	T
	c) $Pv = constant$		d) $Pv^{\gamma} = \text{constant}$	
214.	The specific heats at const	ant pressure is greater tha	n that of the same gas at co	onstant volume because
	a) At constant pressure we	ork is done in expanding th	ne gas	
	b) At constant volume wor	rk is done in expanding the	e gas	
	=	n increases more at consta	=	
	d) The molecular vibration		-	
	4	_	shown in figure. If $\alpha = \text{vol}$	ıme coefficient of gas =
	$\frac{1}{273}$ per°C, then what is the	volume of gas at a temper	ature of 819°C	
	V(litre)			
	0.75			
	0.5			
	0.25 +			
	a) $1 \times 10^{-3} m^3$	b) 2 × 10=3 ··· 3	c) $3 \times 10^{-3} m^3$	d) $4 \times 10^{-3} m^3$
		•	*	•
		b) 2 : 3	c) 2:21	K and 450 K respectively is d) 4:9
	,	•		,
			ecules per cm ² on an ave	rage. The temperature
	there is 3 K. The pressur			D F O 40-5 M = -1
	a) 20.7 × 10 1′ Nm 1	b) 15.3 × 10 13 Nm ⁻¹	c) $2.3 \times 10^{-10} \text{ Nm}^{-1}$	a) 5.3 × 10 ⁻³ Nm ⁻¹

		gram molecule of a gas at r	normal temperature and pi	ressure is $(R =$
	31 J/mol – K) 0.56 × 10 ⁴ J	b) $1.3 \times 10^2 J$	c) $2.7 \times 10^2 I$	d) $3.4 \times 10^3 J$
-	=	· ·	•	oss section and length all in
				of heat in the longer rod is 4
	ls^{-1} , that in the shorter			or mean in the render real is
a)		b) 2	c) 8	d) 6
-		have speeds 1, 2, 3 and 4	,	,
	olecules is	nave speeds 1, 2, 3 and 5	+ Kills . The value of thi	is speed of the gas
1110	ofecules is			_
al	$\frac{1}{2}\sqrt{15} \text{kms}^{-1}$	b) $\frac{1}{2} \sqrt{10} \text{ kms}^{-1}$	c) 2.5 kms ⁻¹	d) $\sqrt{\frac{15}{2} \text{ kms}^{-1}}$
٠,	2 15 kms	2 V10 Kills	o) als imis	$\sqrt{2}$ Kills
221. Ca	alculate the ratio of rn	ns speeds of oxygen gas r	nolecules to that of hydr	ogen gas molecules kept
at	the same temperatur	·e.		
	1:4	b) 1:8	c) 1:2	d) 1:6
-				constant volume (C_V) which
	correct	more or an racar gas at come	cant pressure (op) and at t	onotant volume (oy) which
	_	D	b) C_V of hydrogen gas is $\frac{7}{2}$	D
	C_P of hydrogen gas is $\frac{5}{2}$			
	H_2 has very small value		<i>,</i> ,	_
		and B with frictionless p		
te	mperature and the sa	me volume V. The masse	es of gas in A and B are m	n_A and m_B respectively.
Th	ne gases are allowed t	o expand isothermally to	same final volume 2 V. '	The change in pressures
of	the gas in A and B ar	e found to be Δp and 1.5.	Δp respectively. Then	
a)	$9m_A = 4m_B$	b) $3m_A = 2m_B$	c) $2m_A = 3m_B$	d) $4m_A = 9m_B$
_	netic theory of gases wa		, n b	n B
	Einstein	b) Newton	c) Maxwell	d) Raman
-		e at 0°C is 10 g/cc and at 10		
	pansion of the substan		WIIDN	
	10 ⁻⁴ °C ⁻¹	b) 10 ⁻² °C ⁻¹	c) 10 ⁻³ °C ⁻¹	d) 10 ² °C ⁻¹
226. A c	diatomic molecule has l	how many degrees of freed	om	,
a)		b) 4	c) 5	d) 6
-		e root –mean square veloci	•	•
	spectively at a given ter		·····	,,
			c) $V_O = V_N = V_H$	d) $V_O > V_H > V_N$
		ture graphs of an ideal gas a		
D	↑ P ↑	"↑	8	8
,				
		- /		
	T	T T		
	``	ii) (iii)		
a)	Density of gas is increa	ising in graph (i)	b) Density of gas is decrea	asing in graph (ii)
-	Density of gas is consta	- , ,	d) None of these	
				mm of mercury at 27°C. Its
		umber of molecules that re		
_	2×10^{16}	b) 3×10^{15}	c) 3.86×10^{11}	d) 5×10^{11}
230. Th	ne translatory kinetic er	nergy of a gas per g is		

231.	$22~g~of~CO_2$ at $27^{\circ}C$ is mixe	ed with 16 g of oxygen at 3'	7°C. The temperature of the	e mixture is		
	a) 32°C	b) 27°C	c) 37°C	d) 30°C		
232.	32. Gas at a pressure P_0 in contained is a vessel. If the masses of all the molecules are halved and their speeds are doubled, the resulting pressure P will be equal to					
	a) $4P_0$	b) 2 <i>P</i> ₀	c) <i>P</i> ₀	d) $\frac{P_0}{2}$		
233	To double the volume of a	given mass of an ideal gas	at 27°C keening the pressu	re constant, one must raise		
2001	the temperature in degree		at 17 d Reeping the pressu	are constant, one mast raise		
	a) 54°	b) 270°	c) 327°	d) 600°		
234.	•	,	of density $ ho$ is proportional	,		
	a) $\frac{1}{\rho^2}$	b) $\frac{1}{\rho}$	c) ρ^2	d) ρ		
235.	Vessel <i>A</i> is filled with hydromass of oxygen at the sam a) 16:1	ne temperature. The ratio o b) 1 : 8	c) 8:1	, is filled with the same s of hydrogen and oxygen is d) 1:1		
236.	For matter to exist simulta	aneously in gas and liquid p	phases			
	a) The temperature must					
	b) The temperature must					
	= = = = = = = = = = = = = = = = = = =	be less than the critical ten	=			
	•	be less than the reduced te	-			
237.	•		c material have their diame			
	-		e between their ends is sar	ne, the ratio of heat		
	conducted respectively by		1 16	D 1 0		
220	a) 1:2		c) 1:16	d) 1:8		
238.	Which of the following for	muia is wrong				
	· ·		c) $C_P/C_V = \gamma$			
239.			The rms velocity of molec	cules of gas with twice		
	_	nd half the absolute temp				
	a) 300 ms^{-1}	b) 600 ms ⁻¹	c) 75 ms^{-1}	d) 150 ms ⁻¹		
240.	The graph which represer	nts the variation of mean ki	inetic energy of molecules v	with temperature t° C is		
	a) _E ↑	b) _E ↑	c) _E /	d) _E ↑		
	t°C	L	Lt°C	t°C		
241	True shambara containing	em and m gram af a gas	ot nancauras manda nasa	a ativolv and mut in		
241.	•		at pressures p_1 and p_2 responing constant. The common	• •		
		-	=	_		
	a) $\frac{p_1p_2(m_1+m_2)}{p_2m_1+p_1m_2}$	b) $\frac{p_1p_2m_1}{p_2m_1+p_1m_2}$	c) $\frac{m_1 m_2 (p_1 + p_2)}{p_2 m_1 + p_1 m_2}$	d) $\frac{m_1 m_2 p_2}{n_2 m_1 + n_1 m_2}$		
242	For a gas $\gamma = 7/5$. The gas		$p_2m_1+p_1m_2$	P2.11 + P1.112		
,	a) Helium	b) Hydrogen	c) Argon	d) Neon		
243.		,	ture comes down to 33.33°			
	temperature of surroundi	-				
	a) 15°C	b) 20°C	c) 25°C	d) 10°C		
244.		•	gen molecules is equal to e	•		
	surface, will be			-		
	a) 1060 <i>K</i>	b) 5030 <i>K</i>	c) 8270 K	d) 10063 <i>K</i>		
245.		me of an ideal gas at 0°C be				
	a) 546°C	b) 182°C	c) 819°C	d) 646°C		

246. When a vander waal's gas undergoes free expansion	then its temperature	
a) Decreases	b) Increases	
c) Does not change	d) Depends upon the natu	ire of the gas
247. What is the velocity of wave in monoatomic gas havi	ng pressure 1 <i>kilopascal</i> a	
a) $3.6 m/s$ b) $8.9 \times 10^3 m/s$	c) Zero	d) None of these
248. Graph of specific heat at constant volume for a mono	atomic gas is	
a) $C \longrightarrow T$ b) $C \longrightarrow T$	c) $\frac{3}{2}R$ T	d) $\frac{3}{2}R$
249. For a real gas (van der Waal's gas)		
a) Boyle temperature is a/Rb		
b) Critical temperature is a/Rb		
c) Triple temperature is $2a/Rb$		
d) Inversion temperature is $a/2Rb$		
250. A sample of an ideal gas occupies a volume V at a pre-	essure <i>P</i> and absolute temp	\mathbf{p}
molecule is m . The expression for the density of gas:		
a) mkT b) P/kT	c) P/kTV	d) Pm/kT
251. If pressure of ${\it CO}_2$ (real gas) in a container is given b	$yP = \frac{RT}{2V_{c}h} - \frac{a}{4h^2}$, then mas	s of the gas in container is
a) 11 <i>g</i> b) 22 <i>g</i>	c) 33 g	d) 44 <i>g</i>
252. If masses of all molecules of a gas are halved and	d their speeds are double	s, then the ratio of initial
and final pressures is		
a) 1: 2 b) 2: 1	c) 4:1	d) 1: 4
253. At NTP, sample of equal volume of chlorine and oxyg	,	
a) 1 : 1 b) 32 : 27	c) 2:1	d) 16:14
254. For a gas, the <i>r</i> . <i>m</i> . <i>s</i> . speed at 800 <i>K</i> is	CATION	,
a) Four times the value at 200 K	b) Half the value at 200 K	
c) Twice the value at 200 K	d) Same as at 200 <i>K</i>	
255. Root mean square speed of the molecules of idea	al gas is v . If pressure is i	ncreased two times at
constant temperature, the rms speed will becom	ie	
a) $\frac{v}{2}$ b) v	c) 2 <i>v</i>	d) 4v
4	C) 20	u) + <i>v</i>
256. The ratio of two specific heats $\frac{C_P}{C_V}$ of CO is		
a) 1.33 b) 1.40	c) 1.29	d) 1.66
257. A wheel is $80.3\ \text{cm}$ in circumference. An iron tyre me	easures 80.0 cm around its	inner face. If the coefficient
of linear expansion for iron is 12×10^{-6} °C ⁻¹ , the term	nperature of the tyre must	be raised by
a) 105°C b) 417°C	c) 312°C	d) 223°C
258. From the following $V - T$ diagram we can conclude		
V P_1 T_1 T_2 T		
a) $P_1 = P_2$ b) $P_1 > P_2$	c) $P_1 < P_2$	d) None of these
259. The temperature of a gas at pressure <i>P</i> and volume I		

temperature is raised to 927°C, then its pressure wil be

a) 2 <i>P</i>	b) 3 <i>P</i>	c) 4 P	d) 6 <i>P</i>
260. At a given temperature	the ratio of r . m . s . velocities	s of hydrogen molecule and	l helium atom will be
a) $\sqrt{2}:1$	b) $1:\sqrt{2}$	c) 1:2	d) 2:1
261. The pressure and tempe	rature of two different gase	es is P and T having the vol	ume V for each. They are
mixed keeping the same	volume and temperature, t	the pressure of the mixture	will be
a) <i>P</i> /2	b) <i>P</i>	c) 2P	d) 4 <i>P</i>
262. The molar specific heat	at constant pressure for a m	nonoatomic gas is	•
a) $\frac{3}{2}R$	b) $\frac{5}{2}R$	c) $\frac{7}{2}R$	d) 4 B
4	L	4	d) 4 <i>R</i>
	divided into two parts by a pre (P, 5V) and (10P, V). If note the volume of the gas in two b) 3V, 3V	low the piston is left free ar	
264. Temperature remaining		•	
change in volume	ig constant, the pressure	of gas is decreased by 20	070. The percentage
O	b) Decreases by 20%	c) Increases by 25%	d) decreases by 25%
265. The kinetic energy of on	•		· · · · · · · · · · · · · · · · · · ·
The value of E'/E is	e mole gas at 300K temper	ature, is E. At 400 K tempe	rature killedic ellergy is E.
, , , , , , , , , , , , , , , , , , , ,	(4)	16	
a) 1.33	b) $\sqrt{\left(\frac{4}{3}\right)}$	c) $\frac{16}{9}$	d) 2
	V		
266. The temperature of a pie	ece of metal is increased fro	om 27°C to 84°C. The rate a	t which energy is radiated is
increased to			
a) Four times267. An air bubble doubles it	b) Two times	c) Six times	d) Eight times
it. If the atmospheric pro	essure is equal to 10 <i>m</i> of w		the reservoir is
a) 10 <i>m</i>	b) 20 m	c) 70 m	d) 80 m
268. Which of the following of	ylindrical rods will conduct	t maximum heat, when thei	ir ends are maintained at a
constant temperature di	fference?		
a) $l = 1 \text{m}, r = 0.2 \text{m}$	b) $l = 1$ m, $r = 0.1$ m	c) $l = 10 \text{m}, r = 0.1 \text{m}$	d) $l = 0.1$ m, $r = 0.3$ m
269. 310 <i>J</i> of heat is required to 35°C. The amount of l constant volume is	to raise the temperature of neat required to raise the te		
a) 384 <i>J</i>	b) 144 <i>J</i>	c) 276 <i>J</i>	d) 452 <i>J</i>
270. The ratio of mean kineti	c energy of hydrogen and o	xygen at a given temperatu	ıre is
a) 1 : 16	b) 1:8	c) 1:4	d) 1 : 1
271. 70 cal of heat is requir	ed to raise the temperatu	are of 2 moles of an ideal	gas from 30°C to 35°C
while the pressure of	the gas is kept constant. T	The amount of the heat re	equired to raise the
temperature of the sai	ne gas through the same	temperature range at co	nstant volume is (gas
constant $R = 2$ cal mo	-		· ·
a) 70 cal	b) 60 cal	c) 50 cal	d) 30 cal
272. At a given temperature	-	-	-
a) 16:1	b) 1 : 16	c) 4:1	d) 1: 4
273. If mass of <i>He</i> atom is 4 t			
a) 2 times of <i>H</i> -mean va		b) 1/2 times of <i>H</i> -mean	
c) 4 times of <i>H</i> -mean va		d) Same as <i>H</i> -mean valu	
,		,	

0.7.4	ml					
274.			o end as shown in figure, Q			
			s shown in figure, the same	e amount of neat will flow		
	through the combination	1[1				
	(a)					
	(b)					
	a) 16 min	b) 12 min	c) 1 min	d) 4 min		
275.	A perfect gas at 27°C is	heated at constant press	ure so as to double its vo	lume. The increase in		
	temperature of the gas	will be				
	a) 300°C	b) 54°C	c) 327°C	d) 600°C		
276.	The kinetic energy of one	g-mole of a gas at normal t	emperature and pressure i	s (R = 8.31 J/mol - K)		
	a) $0.56 \times 10^4 J$	b) $1.3 \times 10^2 J$	c) $2.7 \times 10^2 J$	d) $3.4 \times 10^3 J$		
277.	The root mean square spe	eed of hydrogen molecules	at $300 K$ is $1930 m/s$. Then	n the root mean square		
	speed of oxygen molecule	es at 900 <i>K</i> will be				
	a) $1930\sqrt{3} \ m/s$	b) 836 <i>m/s</i>	c) 63 <i>m/s</i>	d) $\frac{1930}{\sqrt{3}} m/s$		
	,			, ,		
278.				ed to double the pressure of		
			of the gas = $3 J gm^{-1}K^{-1}$) i			
270	a) 3276 J	b) 1638 J	c) 819 J	d) 409.5 <i>J</i>		
279.		- -		100°C. If a thin copper plate		
	a) 1%	b) 4%	ntage increase in its area w			
				d) 2%		
200.	In Vander Waal's equation	n a and b represent $\left(P + \frac{a}{V}\right)$	$\left(V-b\right)=RT$			
	a) Both a and b represent correction in volume					
	b) Both a and b represent adhesive force between molecules					
		force between molecules a	73 1 1 7 3 7 5 1			
			its adhesive force between			
281.	-		w, the container is place	d on a fast moving train.		
		tion, the temperature of	the gas			
	a) Rises above 300 K		b) Falls below 300 K			
	c) Remains unchanged		d) Become unsteady			
282.	9 9	e in internal energy for unit	change in temperature for	constant volume is U_1 and		
	U_2 respectively. U_1 : U_2 is	L) 2 . F	-) 1 . 1	J) F . 7		
202	a) 5:3	b) 3:5	c) 1:1	d) 5 : 7		
	The relation between two	D				
	a) $C_P - C_V = \frac{R}{J}$	b) $C_V - C_P = \frac{R}{J}$	c) $C_P - C_V = J$	$d) C_V - C_P = J$		
		ired to raise one mole thro	ugh one degree kelvin for a	monoatomic gas at		

constant volume is

a) $\frac{3}{2}R$

b) $\frac{5}{2}R$

c) $\frac{7}{2}R$

d) 4R

285. In the two vessels of same volume, atomic hydrogen and helium at pressure 1 atm and 2 atm are filled. If temperature of both the samples is same, then average speed of hydrogen atoms $< C_H >$ will be related to that of helium $< C_{He} >$ as

a) $< CH > = \sqrt{2} < C_{He} >$

c) $< C_H > = 2 < C_{He} >$

b) $< C_H > = < C_{He} >$ d) $< C_H > = \frac{< C_{He} >}{2}$

206 When volume of gratem is in ground to	rue times and temperature is degrees	ad half of ita initial				
286. When volume of system is increased to temperature, then pressure becomes	wo times and temperature is decrease	ed han of its initial				
a) 2 times b) 4 times	1	1				
a) 2 times	c) $\frac{1}{4}$ times	d) $\frac{1}{2}$ times				
287. The average translational kinetic ener	gy of a hydrogen gas molecules at NT	P will be				
[Boltzmann's constant $k_R = 1.38 \times 10$	$0^{-23}I/K$					
a) $0.186 \times 10^{-20} Joule$ b) $0.372 \times$		-				
288. Six moles of O ₂ gas is heated from 2						
constant pressure is 8 cal mol^{-1} –	constant pressure is 8 cal mol ⁻¹ – K ⁻¹ and $R = 8.31$ Jmol ⁻¹ – K ⁻¹ , what is change in internal					
energy of gas?						
a) 180 cal b) 300 cal	c) 360 cal	d) 540 cal				
289. An ideal gas has an initial pressure of	3 pressure units and an initial volume	of 4 volume units. The table				
gives the final the final pressure and v) in four, processes. Which				
processes start and end on the same is	sotherm					
$A \mid B \mid C \mid D$						
P 5 4 12 6 V 7 6 1 3						
a) <i>A</i> b) <i>B</i>	c) <i>C</i>	d) D				
290. According to the kinetic theory of gase	-					
a) Water freezes	b) Liquid helium freez					
c) Molecular motion stops	d) Liquid hydrogen fro					
291. Vapour is injected at a uniform rate in vessel	a closed vessel which was initially ev	acuated. The pressure in the				
a) Increases continuously	b) Decreases continuo	ously				
c) First increases and then decreases	The Control of the Co	then becomes constant				
292. A closed compartment containing gas						
effect of gravity. Then the pressure in	the compartment is	_				
a) Same everywhere	b) Lower in the front s					
c) Lower in the rear side	d) Lower in the upper					
293. At the same temperature and pressure	e and volume of two gases, which of the	ne following quantities is				
constant a) Total number of molecules	b) Average kinetic ene	argy				
c) Root mean square velocity	d) Mean free path	2.87				
294. The power radiated by a black body is		round the wavelength λ_0 . If the				
temperature of black body is now char						
the power radiated by it will increase	by a factor of					
a) $\frac{4}{3}$ b) $\frac{16}{9}$	c) $\frac{64}{27}$	d) $\frac{256}{81}$				
J	41	01				
295. The equation for an ideal gas is $PV = R$						
a) 1 g gas b) Any mas	9 9 9	d) One <i>litre</i> gas				
296. According to Maxwell's law of distr		•				
a) Greater than the mean velocity	b) Equal to the mean	<u> </u>				
c) Equal to the root mean square ve	-	t mean square velocity				
297. If universal gas constant is R , the estimates	ssential heat to increase from 273	K to 473 K at constant				
volume for ideal gas of 4 mol is						
a) 200 <i>R</i> b) 400 <i>R</i>	c) 800 R	d) 1200 R				
298. Mean free path of a gas molecule is						
a) Inversely proportional to number o	_					
b) Inversely proportional to diameter	of the molecule					

c) Directly proportional to the square root of the absolute temperature

d) Directly proportional to the molecular mass

299. To what temperature should the hydrogen at 327°C be cooled at constant pressure, so that the root mean square velocity of its molecules becomes half of its previous value?

a) -123°C

b) 123°C

c) -100°C

300. At constant volume, temperature is increased. Then

a) Collision on walls will be less

b) Number of collisions per unit time will increase

c) Collisions will be in straight lines

d) Collisions will not change

301. The temperature at which the average translational kinetic energy of a molecule is equal to the energy gained by an electron in accelerating from rest through a potential difference of 1 volt is

a) $4.6 \times 10^3 K$

b) $11.6 \times 10^3 K$

c) $23.2 \times 10^3 K$

d) $7.7 \times 10^3 K$

302. For a gas if $\gamma = 1.4$, then atomicity, C_P and C_V of the gas are respectively

a) Monoatomic, $\frac{5}{2}R$, $\frac{3}{2}R$ b) Monoatomic, $\frac{7}{2}R$, $\frac{5}{2}R$ c) Diatomic, $\frac{7}{2}R$, $\frac{3}{2}R$

d) Triatomic, $\frac{7}{2}R$, $\frac{5}{2}R$

303. A given mass of a gas is allowed to expand freely until its volume becomes double. If C_b and C_a are the velocities of sound in this gas before and after expansion respectively, then \mathcal{C}_a is equal to

a) $2C_b$

b) $\sqrt{2}C_h$

c) *C*_b

d) $\frac{1}{\sqrt{2}}C_b$

304. The latent heat of vaporization of water is 2240 J. If the work done in the process of vaporization of 1 g is 168 J, then increase in internal energy is

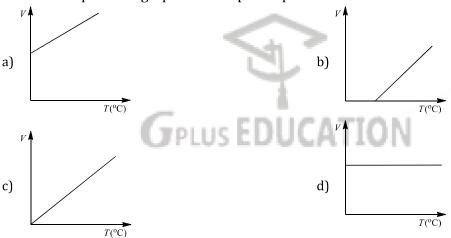
a) 2072 J

b) 1904 I

c) 2408 J

d) 2240 I

305. Volume-temperature graph at atmospheric pressure for a monoatomic gas (*V* in m³, *T* in °C) is



306. If the volume of the gas containing n number of molecules is V, then the pressure will decrease due to force of intermolecular attraction in the proportion

a) n/V

b) n/V^2

c) $(n/V)^2$

d) $1/V^2$

307. The average momentum of a molecule in an ideal gas depends on

a) Temperature

b) Volume

c) Molecular mass

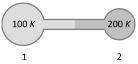
d) None of these

308. Find the ratio of specific heat at constant pressure to the specific heat constant volume for NH₃

b) 1.44

c) 128

309. Figure shows two flasks connected to each other. The volume of the flask 1 is twice that of flask 2. The system is filled with an ideal gas at temperature $100 \, K$ and $200 \, K$ respectively. If the mass of the gas in 1 be m then what is the mass of the gas in flask 2



b) m/2

c) m/4

d) m/8

310. Six molecules speeds 2 unit, 5 unit, 3 unit, 6 unit, 3 unit, and 5 unit respectively. The rms speed is

	a) 4 unit	b) 1.7 unit	c) 4.2 unit	d) 5 unit
311	. Speed of sound in a gas is	v and r . m . s . velocity of the	e gas molecules is \emph{c} . The ra	tio of v to c is
	a) $\frac{3}{\nu}$, γ	3	$\overline{\gamma}$
	a) - γ	b) $\frac{\gamma}{3}$	c) $\sqrt{\frac{3}{\gamma}}$	d) $\sqrt{\frac{\gamma}{3}}$
312	. At what temperature th oxygen at 127°C?	e molecule of nitrogen w	ill have same rms veloci	ty as the molecule of
	a) 457°C	b) 273°C	c) 350°C	d) 77°C
313		α werage energy) per g mole		
	a) $\frac{3}{2}RT$	b) $\frac{1}{2}kT$	c) $\frac{1}{2}RT$	d) $\frac{3}{2}kT$
	4	4	$\frac{1}{2}$	$\frac{1}{2}\kappa I$
314	Ideal gas and real gas has) D	Dat Cal
045	a) Phase transition	b) Temperature	c) Pressure	d) None of them
315	_	length of a copper rod as 9		
	-	. What would be tape read f	9	ien both are at 30°C.Given,
		and α for copper is 1.7 \times 1		1) 00 00
216	a) 90.01 cm	b) 89.90 cm	c) 90.22 cm	d) 89.80 cm
310		ect of pressure is same for a	c) Dalton's law	d) None of these
217	a) Pascal's law	b) Gay Lussac's law	•	,
317		energy radiated by P and Q		oundings is 25°C and 527°C
	a) 48°C	b) 46°C	c) 49°C	d) 42.85°C
318	. Kinetic theory of gases pr		C) 47 C	u) 12. 05 C
510	a) Charle's law	ovide a base for	b) Boyle's law	
	c) Charle's law and Boyle	's law	d) None of these	
319		eal gas is increased from 27		n square speed of its
	molecules becomes			• •
	a) Twice	b) Half	c) Four times	d) One-fourth
320	. On colliding in a closed co	the control of the co		
	a) Transfer momentum to	the walls	b) Momentum becomes z	ero
	c) Move in opposite direc	tions	d) Perform Brownian mo	tion
321	. The volume of a gas at 20 volume will be	$^{\circ}\mathrm{C}$ is $200~ml$. If the tempera	ture is reduced to -20°C a	t constant pressure, its
	a) 172.6 <i>ml</i>	b) 17.26 <i>ml</i>	c) 192.7 ml	d) 19.27 <i>ml</i>
322	•	vessels 1 and 2 are filled wi	• , •	-, ,,
	pressure (P_1, P_2) respectivessel at equilibrium will	vely. If the valve joining the be	two vessels is opened, the	temperature inside the
	a) $T_1 + T_2$	b) $(T_1 + T_2)/2$	c) $\frac{T_1 T_2 (P_1 V_1 + P_2 V_2)}{P_1 V_1 T_2 + P_2 V_2 T_1}$	d) $\frac{T_1 T_2 (P_1 V_1 + P_2 V_2)}{P_1 V_1 T_1 + P_2 V_2 T_2}$
323	. The number of translation	nal degrees of freedom for a	a diatomic gas is	
	a) 2	b) 3	c) 5	d) 6
324	. The gases carbon-mond	oxide (CO) and nitrogen a	nt the same temperature	have kinetic energies
	E_1 and E_2 respectively.	Then		
	a) $E_1 = E_2$		b) $E_1 > E_2$	
	c) $E_1 < E_2$		d) E_1 and E_2 cannot be	compared
325		o of specific heats is given to		2
	a) $C_V = \frac{3R}{I}$	b) $C_P = \frac{3R}{I}$	c) $C_P = \frac{5R}{I}$	d) $C_V = \frac{5R}{I}$
	a) $c_V = \frac{1}{I}$	$U_I C_P = \frac{1}{I}$	$c_I c_P = \frac{1}{I}$	$u_I c_V = \frac{1}{I}$

226	_	
326. The <i>r</i> . <i>m</i> . <i>s</i> . velocity of a gas at a certain temperature	is $\sqrt{2}$ times than that of th	e oxygen molecules at that
temperature. The gas can be a) H_2 b) He	c) <i>CH</i> ₄	d) <i>SO</i> ₂
327. The temperature of an ideal gas is reduced from 927	•	
becomes	a to 27 di me rimisi vele	verty of the inforcedies
a) Double the initial value	b) Half of the initial value	<u> </u>
c) Four times the initial value	d) Ten times the initial va	
328. According to the kinetic theory of gases, the tem	•	
a) Velocities of its molecules	b) Linear momenta of it	· ·
c) Kinetic energies of its molecules	d) Angular momenta of	
329. The tyre of a motor car contains air at 15°C. If the	· ·	
approximate percentage increase is (ignore to e	•	o to bo dy the
a) 7 b) 9	c) 11	d) 13
330. According to the kinetic theory of gases the $r.m.s.$ ve		
a) T b) \sqrt{T}	c) T^2	d) $1/\sqrt{T}$
331. The root mean square speed of hydrogen molecules	•	- 1
is 3180 <i>metres/second</i> . The pressure on the hydrog		
$10^{-2}kg/m^3$, 1 atmosphere = $1.01 \times 10^5 N/m^2$)		
a) 1.0 atm b) 1.5 atm	c) 2.0 atm	d) 3.0 atm
332. Two moles of oxygen is mixed with eight moles	of helium. The effective s	specific heat of the
mixture at constant volume is		
a) 1.3 <i>R</i> b) 1.4 <i>R</i>	c) 1.7 <i>R</i>	d) 1.9 <i>R</i>
333. What is the ratio of specific heats of constant pressur	re and constant volume for	NH_3
a) 1.33 b) 1.44	c) 1.28	d) 1.67
334. Which one of the following graph is correct at consta	nt pressure	
V/T V/T	V/T	V/T
a) 1 b) 1	c) 1	d) 1
$1/V \longrightarrow 1/V \longrightarrow$	1/V →	1/V →
335. The average kinetic energy of a gas molecule can be		1//
a) The number of molecules in the gas	b) The pressure of the ga	s only
c) The temperature of the gas only	d) None of the above is en	•
336. The adjoining figure shows graph of pressure and vo	-	• •
the following inferences is correct	8 1	1 2
$P \uparrow \downarrow \downarrow \downarrow$		
T ₂		
$\stackrel{\longrightarrow}{\longrightarrow} V$	1)	
a) $T_1 > T_2$	b) $T_1 = T_2$	1
c) $T_1 < T_2$	d) No interference can be	
337. At what temperature the rms velocity of helium	molecules will be equal	to that of hydrogen
molecules at NTP?	27200	1) 277 IV
a) 844 K b) 64 K	c) 273°C	d) 273 K
338. $CO_2(O-C-O)$ is a triatomic gas. Mean kinetic energy k -Boltzmann's constant and molecular weight of $CO_2(O-C)$		(II N-Avogadro's number,
a) $(3/88)NkT$ b) $(5/88)NkT$	(6/88)NkT	d) (7/88) <i>NkT</i>
339. For a gas molecule with 6 degrees of freedom th		, , ,
following relation between the molecular specif		== =

a)
$$C_V = \frac{R}{2}$$

b)
$$C_V = R$$

c)
$$C_V = 2R$$

$$d) C_V = 3R$$

340. The value of critical temperature in terms of Vander Waal's constant a and b is

a)
$$T_c = \frac{8a}{27Rb}$$

b)
$$T_c = \frac{a}{2Rb}$$

c)
$$T_c = \frac{8}{27Rb}$$

d)
$$T_c = \frac{27a}{8Rb}$$

341. The product of the pressure and volume of an ideal gas is

a) A constant

- b) Approx. equal to the universal gas constant
- c) Directly proportional to its temperature
- d) Inversely proportional to its temperature

342. A bubble is at the bottom of the lake of depth h. As the bubble comes to sea level, its radius increases three times. If atmospheric pressure is equal to l metre of water column, then h is equal to

- a) 26 *l*
- b) *l*

c) 25 l

d) 30 *l*

343. Two spheres made of same material have radii in the ratio1: 2. Both are at same temperature. Ratio of heat radiation energy emitted per second by them is

a) 1:2

b) 1:4

c) 1:8

d) 1:16

344. A lead bullet of 10 g travelling at 300 ms⁻¹ strikes against a block of wood comes to rest. Assuming 50% of heat is absorbed by the bullet, the increase in is temperature is (Specific heat of lead = 150 JkgK^{-1})

- a) 100°C
- b) 125°C
- c) 150°C
- d) 200°C

345. A horizontal uniform glass tube of 100 cm length sealed at both ends contains 10 cm mercury column in the middle. The temperature and pressure of air on either side of mercury column are respectively 31°C and 76 cm of mercury. If the air column at one end is kept at 0° C and the other end at 273° C, the pressure of air which is at 0° C is (in cm of Hg)

a) 76

b) 88.2

- c) 102.4
- d) 12.2

346. The relationship between pressure and the density of a gas expressed by Boyle's law, P = KD holds true

- a) For any gas under any conditions
- b) For some gases under any conditions
- c) Only if the temperature is kept constant
- d) Only if the density is constant

347. A closed vessel is maintained at a constant temperature. It is first evacuated and then vapour is injected into it continuously. The pressure of the vapour in the vessel

a) Increases continuously

- b) First increases and then remains constant
- c) First increases and then decreases
- d) None of the above

348. Two balloons are filled, one with pure He gas and the other by air, respectively. If the pressure and temperature of these balloons are same, then the number of molecules per unit volume is

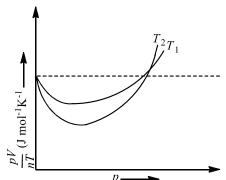
a) More in the He filled balloon

b) Same in both balloons

c) More in air filled balloon

d) In the ratio of 1:4

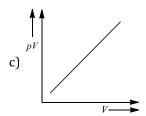
³⁴⁹. The figure below shows the plot of $\frac{pV}{nT}$ *versus p* for oxygen gas at two different temperatures.

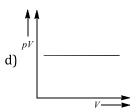


Read the following statements concerning the above curves.

I. The dotted line corresponds to the ideal gas behavior

II. $T_1 > T_2$ III. The value of $\frac{pV}{nT}$ at the point where the curves meet on the *y*-axis is the same for all gases. b) (i) and (ii) only c) All of these d) None of these 350. What is the value of $\frac{R}{C_R}$ for diatomic gas d) 5/7b) 3/5 351. For one gram mol of a gas, the value of R in the equation PV = RT is nearly d) 200 cal/K b) 10 cal/K a) 2 cal/K c) 0.2 *cal/K* 352. Considering the gases to be ideal, the value of $\gamma = \frac{c_P}{c_V}$ for a gaseous mixture consisting of 3 moles of carbon dioxide and 2 moles of oxygen will be ($\gamma_{O_2} = 1.4, \gamma_{CO_2} = 1.3$) d) 1.63 a) 1.37 353. A cylinder of fixed capacity (of 44.8 litres) contains 2 moles of helium gas at STP. What is the amount of heat needed to raise the temperature of the gas in the cylinder by 20°C (Use $R = 8.31 \, I \, mol^{-1} K^{-1}$) a) 996 J b) 831 I c) 498 J d) 374 I 354. A vessel contains 32 g of O_2 at a temperature T. The pressure of the gas is p. An identical vessel containing 4 g of H₂ at a temperature 2T has a pressure of d) $\frac{p}{q}$ a) 8 p b) 4 p 355. The heat capacity per mole of water is (R is universal gas constant) a) 9R d) 5R356. A gaseous mixture consists of 16g of helium and 16g of oxygen. The ratio $\frac{c_P}{c_V}$ of the mixture is b) 1.54 a) 1.4 357. One litre of oxygen at a pressure of 1 atm and two litres of nitrogen at a pressure of 0.5 atm, are introduced into a vessel of volume 1 L. If there is no change in temperature, the final pressure of the mixture of gas (in atm) is a) 1.5 b) 2.5 c) 2 358. The value of \mathcal{C}_V for one mole of neon gas is d) 4 b) $\frac{3}{2}R$ a) $\frac{1}{2}R$ 359. If the oxygen (O_2) has root mean square velocity of $C ms^{-1}$, then root mean square velocity of the hydrogen (H_2) will be c) 4*C* ms⁻¹ d) $\frac{C}{4}ms^{-1}$ b) $\frac{1}{c} m s^{-1}$ a) $C ms^{-1}$ 360. The average kinetic energy of a gas at -23° C and 75 cm pressure is $5 \times 10^{-14} erg$ for H_2 . The mean kinetic energy of the O_2 at 227°C and 150 cm pressure will be a) $80 \times 10^{-14} erg$ b) $20 \times 10^{-14} erg$ c c) $40 \times 10^{-14} erg$ d) $10 \times 10^{-14} erg$ 361. Oxygen boils at (-183°C) . The temperature on the Fahrenheit scale is b) -253.6°F c) -342.6°F d) -225.3°F 362. Which one of the following graphs represents the behaviour of an ideal gas?





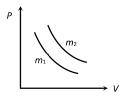
- 363. A gas at 27°C has a volume *V* and pressure *P*. On heating its pressure is doubled and volume becomes three times. The resulting temperature of the gas will be
 - a) 1800°C
- b) 162°C
- c) 1527°C
- d) 600°C

- 364. S.I. unit of universal gas constant is
 - a) cal/°C
- b) //mol
- c) $I \, mol^{-1} K^{-1}$
- d) J/kg
- ^{365.} If one mole of a monoatomic gas $\left(\gamma = \frac{5}{3}\right)$ is mixed with one mole of a diatomic gas $\left(\gamma = \frac{7}{5}\right)$, the value of γ for the mixture is
 - a) 1.40

b) 1.50

c) 1.53

- d) 3.07
- 366. Two different isotherms representing the relationship between pressure p and volume V at a given temperature of the same ideal gas are shown for masses m_1 and m_2 of the gas respectively in the figure given, then



- a) $m_1 > m_2$
- b) $m_1 = m_2$
- c) $m_1 < m_2$
- d) $m_1 > m_2$
- 367. At 100 *K* and 0.1 atmospheric pressure, the volume of helium gas is 10 *litres*. If volume and pressure are doubled, its temperature will change to
 - a) 400 k

- b) 127 K
- c) 200 K
- d) 25 K
- 368. A gas is filled in a cylinder, its temperature is increased by 20% on kelvin scale and volume is reduced by 10%. How much percentage of the gas will leak out
 - a) 30%

b) 40%

c) 15%

- d) 25%
- 369. The root mean square velocity of gas molecules at 27°C is $1365~\text{ms}^{-1}$. The gas is
 - a) 0_2

b) He

c) N_2

- d) CO₂
- 370. A gas mixture consists of 2 moles of oxygen and 4 moles of argon at temperature *T*. Neglecting all vibrational moles, the total internal energy of the system is
 - a) 4 RT

- b) 15 *RT*
- c) 9 RT

- d) 11 RT
- 371. The molar heat capacity at constant volume of oxygen gas at STP is nearly $\frac{5R}{2}$ and it approaches $\frac{7R}{2}$ as the temperature is increased. This happens because at higher temperature
 - a) Oxygen becomes triatomic

- b) Oxygen does not behaves as an ideal gas
- c) Oxygen molecules rotate more vigorously
- d) Oxygen molecules start vibrating
- 372. A sample of gas is at 0° C. To what temperature it must be raised in order to double the r.m.s. speed of the molecule
 - a) 270°C
- b) 819°C
- c) 1090°C
- d) 100°C
- 373. A cylinder rolls without slipping down an inclined plane, the number of degrees of freedom it has, is
 - a) 2

b) 3

c) 5

- d) 1
- 374. At which temperature the velocity of O_2 molecules will be equal to the velocity of N_2 molecules at 0°C
 - a) 40°C

b) 93°C

c) 39°C

- d) Cannot be calculated
- 375. When the temperature of a gas is raised from 27° C to 90° C, the percentage increase in the r.m.s. velocity of the molecules will be
 - a) 10%

b) 15%

c) 20%

d) 17.5%

376. For a gas $\frac{R}{C_V} = 0.67$. This gas is made up of molecules which are			
a) Diatomic		b) Mixture of diatomic and polyatomic molecules	
		d) Polyatomic	
377. A gas at the temperature 250 <i>K</i> is contained in a closed vessel. If the gas is heated through 1 <i>K</i> , then the			
percentage increase in its pressure will be			
a) 0.4%	b) 0.2%	c) 0.1%	d) 0.8%
378. 8 g of O ₂ , 14 g of N ₂ and 22 g of CO ₂ is mixed in a container of 10 L capacity at 27°C. The pressure exerted			
by the mixture in terms of atmospheric pressure is			
$(R = 0.082 \text{ L atm K}^{-1} \text{ m})$			
a) 1.4 atm	b) 2.5 atm	c) 3.7 atm	d) 8.7 atm
379. An ideal gas is filled in a	vessel, then	•	
a) If it is placed inside a moving train, its temperature increases			
b) Its centre of mass moves randomly			
c) Its temperature remains constant in a moving car			
d) None of these			
380. An ideal gas is expanding such that pT^2 = constant. The coefficient of volume expansion of the gas			
is			. 0
a) $\frac{1}{T}$	b) $\frac{2}{T}$	c) $\frac{3}{T}$	d) $\frac{4}{T}$
1	1	1	1
381. On giving equal amount of heat at constant volume to 1 <i>mole</i> of a monoatomic and a diatomic gas the rise in temperature			
a) Monoatomic	b) Diatomic	c) Same for both	d) Can not be predicted
382. At what temperature is the root mean square velocity of gaseous hydrogen molecules equal to that of oxygen molecules at 47°C			
a) $20 K$	b) 80 <i>K</i>	c) -73 K	d) 3 K
•		-	
383. The molecules of a given mass of a gas have a rms velocity of 200 m/s at 27°C and 1.0×10^5 N/m ²			
pressure. When the temperature is 127°C and pressure is 0.5×10^5 N/m ² , the rms velocity in m/s			
will be		400	
a) $\frac{100\sqrt{2}}{3}$	b) $100\sqrt{2}$	c) $\frac{400}{\sqrt{3}}$	d) None of these
3	C) 100 V Z	$\sqrt{3}$	
384. At what temperature the kinetic energy of gas molecule is half of the value at 27°C?			
a) 13 . 5°C	b) 150°C	c) 75 K	d) – 123°C
385. If the temperature of an i	ideal gas increases three tin	nes, then its rms velocity w	vill become
a) $\sqrt{3}$ times	b) 3 times	c) One third	d) Remains same
386. A diatomic gas is heated at constant pressure. What fraction of the heat energy is used to increase the			
thermal energy			
a) 3/5	b) 3/7	c) 5/7	d) 5/9
387. The velocity of 4 gas molecules are given by 1 km/s, 3 km/s, 5 km/s and 7 km/s. Calculate the			
difference between average and rms velocity.			
a) 0.338	b) 0.438	c) 0.583	d) 0.683