

Max Marks: 200

Date: 08.08.2022

JB 1 MR BATCH CHEMISTRY: PART TEST Topic: States of Matter

- 1. Which one of the following statements is not correct about the three states of matter i.e. solid, liquid and gaseous
 - (a) Molecules of a solid possess least energy whereas those of a gas possess highest energy
 - (b) The density of solid is highest whereas that of gases is lowest
 - (c) Gases like liquids possess definite volumes
 - (d) Molecules of a solid possess vibratory motion
- 2. Which of the following is true about gaseous state
 - (a) Thermal energy = Molecular attraction (b) Thermal energy >> Molecular attraction
 - (c) Thermal energy << Molecular attraction (d) Molecular forces >> Those in liquids

3. Which of the following statement is correct

- (a) In all the three states the molecules possess random translational motion
- (b) Gases cannot be converted into solids without passing through liquid state
- (c) One of the common property of liquids and gases is viscosity
- (d) According to Boyle's law V/P is constant at constant T

4. Which one of the following is not a unit of pressure

- (a) Newton (b) Torr (c) Pascal (d) Bar
- 5. Which of the following relations for expressing volume of a sample is not correct
- (a) $1L = 10^{3}$ ml (b) $1 \text{ dm}^{3} = 1 \text{ L}$ (c) $1 L = 10^{3} \text{ m}^{3}$ (d) $1 L = 10^{3} \text{ cm}^{3}$ 6. $2\text{gm of } O_{2} \text{ at } 27^{\circ} \text{ C} \text{ and } 760\text{mm of Hg pressure has volume}$
- (a) 1.5 lit (b) 2.8 lit (c) 11.2 lit (d) 22.4 lit



7.

8.

9.

Volume occupied by a gas at one atmospheric pressure and 0° C is V mL. Its volume at 273 K will be (a) V ml (b) V/2 ml (c) 2 V (d) Which of the following exhibits the weakest intermolecular forces **HC1** (a) NH_3 (b) (c) He (d) If P, V, T represent pressure, volume and temperature of the gas, the correct representation of Boyle's law is $V \propto \frac{1}{2}$ (at constant P)

(a)	$V \propto \frac{1}{T}$ (at constant P)	(b)	PV = RT
(c)	V $\approx 1 / P$ (at constant T)	(d)	PV = nRT

10. Air at sea level is dense. This is a practical application of

> Boyle's law Charle's law Avogadro's law (d) Dalton's law (a) (b) (c)

None of these

 H_2O

- 11. Which of the following statement is false
 - The product of pressure and volume of fixed amount of a gas is independent of temperature (a)
 - (b) Molecules of different gases have the same K.E. at a given temperature
 - (c) The gas equation is not valid at high pressure and low temperature
 - (d) The gas constant per molecule is known as Boltzmann constant

Densities of two gases are in the ratio 1:2 and their temperatures are in the ratio 2:1, then the ration of their 12. respective pressure is

- (a) 1:1 (b) 1:2 (c) 2:1 (d) 4:1
- 13. Which of the following expression at constant pressure represents Charle's law
 - $V \propto \frac{1}{T^2}$ $V \propto \frac{1}{T}$ (a) (b) (c) VœT (d) Vœd
- 14. Which of the following relationship is correct, where r is the rate of diffusion of a gas and d is its density
 - $r \propto \sqrt{1/d}$ $r \propto \sqrt{d}$ (a) (b) (d) r œ d (c) $\mathbf{r} = \mathbf{d}$

15. The ratio of the rate of diffusion of a given element to that of helium is 1.4. The molecular weight of the element is

2 8 (a) (b) 4 (c) (d) 16



16.	The molecular weight of a gas which diffuses through a porous plug at 1/6th of the speed of hydrogen under identical conditions is							
	(a)	27	(b)	72	(c)	36	(d)	48
17.	The de	nsities of hydrogen gen in the same unit	and oxy s will be	gen are 0.09 and 1.44	$\log L^{-1}$.	. If the rate of diffusion	on of hy	drogen is 1 then that
	(a)	4	(b)	1/4	(c)	16	(d)	1/16
18.	The de	nsities of two gases	are in th	e ratio of 1 : 16. The	ratio of	their rates of diffusion	n is	
	(a)	16:1	(b)	4:1	(c)	1:4	(d)	1:16
19.	Kinetic	e energy of molecule	es is higł	nest in				
	(a)	Gases	(b)	Solids	(c)	Liquids	(d)	Solutions
20.	Which	of the following pai	irs will d	liffuse at the same rate	e throug	h a porous plug		
	(a)	CO, NO ₂	(b)	NO ₂ , CO ₂	(c)	NH ₃ , PH ₃	(d)	NOC_2H_6
21.	A gas c	liffuse at a rate which	ch is twi	ce that of another gas	B. The	ratio of molecular we	ights of	A to B is
	(a)	1.0	(b)	0.75	(c)	0.50	(d)	0.25
22.	The rat	e of diffusion of me	thane at	a given temperature	is twice	that of X. The molecu	ılar weig	ght of X is
	(a)	64.0	(b)	32.0	(c)	40.0	(d)	80.0
23.	At wha	t temperature, the ra	ate of eff	fusion of N ₂ would be	1.625 ti	imes that of SO_2 at 50	° C	
	(a)	110 K	(b)	173 K	(c)	373 K	(d)	273 K
24.	4.4 g o	f a gas at STP occup	pies a vo	lume of 2.24 L, the g	as can b	e		
	(a)	O_2	(b)	СО	(c)	NO ₂	(d)	CO_2
25.	There a mass of	are 6.02×10^{22} mol f the mixture in gran	ecules e ns is	ach of N_2 , O_2 and H	I ₂ whic	h are mixed together	at 760	mm and 273 K. The
	(a)	6.2	(b)	4.12	(c)	3.09	(d)	7



MATHEMATICS : PART TEST Topics: Absolute value and Inequation

26.	6. Range of $f(x) = x^2 - 5x + 2$ is											
	(a)	R	(b)	[−17/4,∞)	(c)	(-∞, -17/14]	(d)	$[0, \infty)$				
27.	$If \ x^2 -$	$7 \leq 9$, then $x \in$										
	(a)	[-4, 4]	(b)	[4, ∞)	(c)	(-∞,-4]	(d)	None of these				
28.	Which	of the following NC	OT true?									
	(a)	If $ x + y = x + y $,	then po	int (x, y) lies in 1^{st} or	^{3rd quad}	lrant or any of the x-a	xis or y-	axis.				
	(b)	If $ x + y < x + y $,	then po	int (x, y) lies in 2^{nd} or	r 4 th quad	drant.						
	(c)	If $ x - y = x + y $,	then po	int (x, y) lies in 2^{nd} or	r 4 th quad	lrant.						
	(d) None of these											
29.	Which	of the following is I	NOT tru	e?								
	(a)	If $-2 < x$, then $ x $	≥ 0		(b)	If $x \leq 3$, then $ x \geq 0$)					
	(c)	If $-3 < x \le 4$, the	$ \mathbf{x} \in [$	[0, 4]	(d)	None of these						
30.	$ x^2 - 6x $	$ x-7 = x^2 - 6x - 7$ is	s not sat	isfied by which of the	e followi	ng?						
	(a)	[-1,7]	(b)	$(-\infty, -1]$	(c)	[7,∞)	(d)	$(-\infty, -6)$				
31.	Produc	t of all the solutions	of the e	quation $ x ^2 - x + 4 =$	$=2x^{2}-3$	$ \mathbf{x} + 1$ is						
	(a)	-16	(b)	-9	(c)	-4	(d)	-1				
32.	If $ \mathbf{x} + \mathbf{z} $	y + y = 5 and $x - y $	=1, the	en the value of $x + y$ i	S							
	(a)	0	(b)	1	(c)	2	(d)	3				



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33.	Complete solution set of the equation $ x - 1 - 2 = x - 3 $ is									
	(a)	$[-1,\infty)$	(b)	[1,∞)	(c)	[2,∞)	(d)	(-∞,3]		
34.	Solutio	on of equation $ \mathbf{x} - 2$	2x + 5 =	0 lies in						
	(a)	(3, 6)	(b)	(1, 4)	(c)	(5,7)	(d)	None of these		
35.	Sum of	f all the solutions of	the quat	ion $ x + 3 + x - 2 =$	11 is					
	(a)	0	(b)	-1	(c)	1	(d)	2		
36.	Produc	t of all of the roots of	of the eq	uation $ x - 3 + 2 x + $	1 = 4 is					
	(a)	3/5	(b)	2	(c)	-5/3	(d)	6		
37.	Least p	oositive integral valu	e of x sa	atisfying $ 4x + 3 + 3x $	x - 4 = x - 4	7x – 1 is				
	(a)	4	(b)	3	(c)	2	(d)	1		
38.	Set of a	all values of x satisf	ying the	equation $ \mathbf{x} + 1 = 5$ –	x – 4 i	s				
	(a)	[-1, 4]	(b)	$(-\infty, -1] \cup [4, \infty)$	(c)	[-1, 6]	(d)	[0, 10]		
39.	The nu	mber of integral val	ues of x	satisfying the equation	on $ \mathbf{x} - \mathbf{x} $	$-4\ = 4$ is				
	(a)	5	(b)	7	(c)	9	(d)	infinite		
40.	$If \ x^2 -$	x = x + x + x = 2	x = 3 x +	2, then the set of all	real valu	ues of x is				
	(a)	$[1,4] \cup \{-2\}$	(b)	[1, 4]	(c)	$[-2,1] \cup [4,\infty)$	(d)	$(-\infty,-2] \cup [1,4]$		
41.	The number of integers satisfying the equation $ x + \left \frac{4-x^2}{x}\right = \left \frac{4}{x}\right $ is									
	(a)	5	(b)	4	(c)	6	(d)	7		



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			Complete solution set of $ x - 2 < 3$ is								
	(a)	x < 5	(b)	x > 0	(c)	-1 < x < 5	(d)	1 < x < 5			
43.	If $\left \frac{12}{4x^2} \right $	$\left \frac{2x}{2+9}\right \le 1$, then									
	(a)	$x \in \mathbf{R}$	(b)	$x \in [-3,3]$	(c)	$x \in [-1,\infty)$	(d)	$x\in(-\infty,2]$			
44.	Which	of the following va	lues of x	do not satisfy $\left \frac{x^2 - x^2}{x^2} \right $	$\frac{5x+4}{-4}$	≤1?					
	(a)	(-∞,-2)	(b)	$\left[\frac{8}{5},\infty\right)$	(c)	$\left(0,\frac{8}{5}\right]$	(d)	None of these			
45.	Numbe	er of integers satisfy	ing $(x^2 -$	$(-4)\sqrt{x^2-1} < 0$ is							
	(a)	1	(b)	2	(c)	3	(d)	infinite			
46.	If x –	2 -1 < 3 then									
	(a)	$-2 \le x \le 6$	(b)	$0 \le x \le 6$	(c)	$-3 \le x \le 4$	(d)	None of these			
47.	Numbe	er of integers satisfy	$\frac{ x }{ x }$	$\frac{-1}{2} > 1$ is							
	(a)	0	(b)	1	(c)	2	(d)	3			
48.	The nu	mber of integers sat	tisfying	$2x - 3 + x + 5 \le x $	– 8 is						
	(a)	5	(b)	6	(c)	7	(d)	8			



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49. The solution of
$$\left| x + \frac{1}{x} \right| > 2$$
 is
(a) $R - \{0\}$ (b) $R - \{-1, 0, 1\}$

(c)	$R-\{1\}$	(d)	$R - \{-1, 1\}$

50. The solution of $\left|\frac{1}{x} - 2\right| < 4$ is

(a)
$$(-\infty, 1/2)$$

(c)
$$(-1/2, 1/6)$$

(d) $(-\infty, -1/2) \cup (1/6, \infty)$





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JB 1 MR BATCH CHEMISTRY : PART TEST ANSWER KEY Topic: States of Matter

1.	(c)	2.	(b)	3.	(c)	4.	(a)	5.	(c)
6.	(a)	7.	(a)	8.	(c)	9.	(c)	10.	(a)
11.	(a)	12.	(a)	13.	(c)	14.	(a)	15.	(a)
16.	(b)	17.	(b)	18.	(b)	19.	(a)	20.	(d)
21.	(d)	22.	(a)	23.	(c)	24.	(d)	25.	(a)

MATHEMATICS: PART TEST ANSWER KEY Topics: Absolute value and Inequation

26.	(b)	27.	(a)	28.	(d)	29.	(d)	30.	(a)
31.	(b)	32.	(b)	33.	(b)	34.	(a)	35.	(b)
36.	(c)	37.	(c)	38.	(a)	39.	(d)	40.	(a)
41.	(b)	42.	(c)	43.	(a)	44.	(a)	45.	(c)
46.	(a)	47.	(b)	48.	(c)	49.	(b)	50.	(d)