MOLE CONCEPT

01) Statement I: In 32 g of O_2 two gram atom of oxygen atom are present.

Statement II: Molecular weight of O_2 is 32 g

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

02)Match the column 1 with column 2.

	prefixes		**multiples**
A	88g of CO_2	p	0.25 mol
B	6.022 x 1023 molecules of h_2o	q	2 mol
C	5.6 litres of O_2 at STP	r	1 mol
D	96g of O_2	s	6.022 x 1023 molecules
E	1 mol of any gas	t	3 mol

(1) A-(t); B-(q);C-(p); D-(r);E-(s)

(1) A-(q); B-(r);C-(P); D-(t);E-(s)

(1) A-(s); B-(p);C-(r); D-(q);E-(i)

(1) A-(p); B-(t);C-(s); D-(q);E-(r)

3) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

Combustion of 16 g of methane gives 18g of water.

Reason(R):

In the combustion of methane , water is one of the products

In the light of the above statements, choose the most appropriate answer from the options given below:

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

04) match the following prefixes with there multiple

	prefixes		multiples
A	micro	p	10^6
B	deca	q	10^9
C	mega	r	10^{-6}
D	giga	s	10^{-15}
E	femto	t	10

(1) A-(r); B-(t);C-(p); D-(q);E-(t)

(1) A-(q); B-(r);C-(P); D-(t);E-(s)

(1) A-(s); B-(p);C-(r); D-(q);E-(i)

(1) A-(p); B-(t);C-(s); D-(q);E-(r)

5) given below are two statements one is labbled as assertion(A) And the other is labbled as reason (R) :

Assertion(A):

6 moles of co_2 will react with 2 moles of o2 to give 4 mole of co_2

Reason(R):

O2 is limiting reagent

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

04) match the following prefixes with there multiple

06) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

Molarity changes with temperature but molalility does not

Reason(R):

Molarity is volume based which changes with temperature while molality is mass based which is not affected by temperature

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

07) Statement I: when 1 mole of NH_3 and 1 mole O_2 are made to react , then all the NH_3 may be consumed if (unbalanced) reaction is

NH_3 (g) + O_2 (g) → NO(g) + H_2O(l)

Statement II: oxygen is limiting reagent as per given data

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

08) Statement I : for a very dilute solution molality are approximately equal

Statement IImass of solution is always approximately equal to mass of solvent for a very dilute solution

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

09) Statement I : equal moles of different substances contain same number of constituent particals

Statement II – equal weights of different substances contain the same number of constituents particles

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

10) Statement I : the percentage of nitrogen is urea is 46.6%.

Statement II – urea is an ionic compound

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

11) match the following prefixes with there multiple

	Column **I**		Column - **II**
A	49 g H_2SO_4	p	0.5 mole
B	20g NAOH	q	1.5 NA atoms
C	11.2 L of CO_2 AT STP	r	0.5 NA molecules
D	6.023×10^{23} atoms of oxygen	s	2 mole of O atoms

1) A-(p,q,r); B-(p,s,r);C-(p,r); D-(p,q,r)

(1) A-(p,r); B-(p,q,r);C-(p,s); D-(p,q,r)

(1) A-(p,q,r); B-(p,q,s);C-(p,s,r); D-(q,r)

(1) A-(p,s,r); B-(p,r);C-(p,q,r); D-(p,r)

12) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

6 moles of CO_2 will react with 2 moles of O_2 to give 4 moles of CO_2

Reason(R):

O_2 is limiting reagent

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

13) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

Number of moles of H_2 in 0.224 L of H_2 (gas) is0.01 mole

Reason(R):

22.4 L of H_2 (gas) at STP contains 6.02 x 1023 moles .

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

14) match the following prefixes with there multiple

	Column **I**		Column - **II**
A	88_g of CO_2	1	0.25 mol
B	6.022×10^{23} molecules of H_2O	2	2 mol
C	5.6 litres of O_2 at STP	3	1 mol
D	96g of O_2	4	6.022 x 1023 molecules
E	1 mole of any gas		3 mol

1) A-2 B-3 C- D-5 E -4

(2) A-2 B-3 C-4 D-5 E-1

(3) A-2 B-3 C-5 D-1 E- 4

(4) A-2 B-3 C-1 D-4 E- 5

15) Statement I : in 32 g of O_2 two gram atom of oxygen atoms are present.

Statement II : molecular weight of O_2 is 32 g

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

16) which of the following pairs have same number of molecules ?

A . 2g of O_2 4g of SO_2

B . 2g of CO_2 2g of N_2O

C . 224 ml O_2 at STP 448 ml of He at 0.5 atm and 273 K

D . 2g oxygen and 2g ozone

1) a ,b & c 2) b, c & d

3a, b ,c & d 4) a ,b, & d

17) Statement I : one mole of an ideal gas have volume of 22.4 litre at 273.15 K and 1 atm

Statement II : under identical condition , equal weight of gases have same volume

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

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18) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

One atomic mass unit is defined as one twelth of mass of one carbon 12 atom

Reason(R):

Carbon 12 isotope Is most abundant isotope of carbon has been chosen as standerd

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

19) 10 g carbon reacts with 100g Cl_2 to form CCL_2 the correct statement is

A . carbon is the limiting reagent

B . CL_2 is limiting reagent

C . 107g CCL_4 is formed

D . 0.833 moles of CCl_4 is formed

1) a ,b & c 2) b, c & d

3a, b ,c & d 4) a ,b, & d

20) Statement I : the mass of Mg_2N_2 produced as the reaction Mg + NH_3 → Mg_3N_2 + H_2 if 48 gm of Mg metal is reacted with 34 gm NH_3 gas is 200/3 g

Statement II : as per the given data N_2 is limiting reagent .

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

21) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

A molecule of butane C_2H_{10} has a mass of 58.12 amu

Reason(R):

One mole of butane contains 6.022 x 10^{23}

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

22) match the following prefixes with there multipl

	Column **I**		Column **- II**
A	Number of carbon atoms in 1g molecules of CO_2	1	0.5 N_0
B	Number of molecules in 48g O_2	2	N_0
C	Number of molecules in 11.2 L H_2 at STP	3	$3N_0$
D	Number of hydrogen atoms in 1mole of NH_3	4	1.5 N_0

(1) A-2 B-3 C-1 D-4.

(2) A-1 B-2 C-3 D-4

(3) A-2 B-4 C-1 D-3

(4) A-2 B-1C-4 D-3

23) match the following prefixes with there multiple

		Column - **II**	
A	$NA_2S_2O_3$	p	30%
B	$KMnO_3$	q	39%
C	NA_3PO_4	r	57%
D	$MGCO_3$	s	40.5%

1) A-3 B-2 C-4 D-1

(2) A-1 B-3 C-2 D-4

(3) A-2 B-4 C-3 D-1

(4) A-1 B-4 C-2 D-3

24)Select the incorrect statements

1) ratio of gm litre & % w/v of solution is independent of solute substance

2) ratio of % w/v and molarity of solution depends on the solute substance

3) ratio of % w/v and molarity of solution depends in the solvent substance

25) Statement I : eqivalent weight of ozone on the change $O_3 \rightarrow O_2$ is 8

Statement II : 1 mole of O_3 on decomposition gives 3/2 moles of O_2

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

26) Given below are two statements : one is labelled as assertion(A) And the other is labelled as reason (R)

Assertion(A):

For calculating the molarity or the mole fraction of solute if the molarity is known it is nessessary to know the density of the solution

Reason(R):

Molality molarity and the mole fraction of solute can be calculated from the weight percentage and density of the solution

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

27)equal masses of SO_2 and O_2 are placed in flask at STP choose the incorrect statement

1) the number of molecules of O_2 is more than SO_2

2) volume occupied at STP is more for O_2 than SO_2

3) the ratio of the number of atoms of SO_2 & O_2 is 3:4

4) moles of SO_2 is greater than the moles of O_2

28) match the following prefixes with there multiple

	Column **I**		Column - **II**
A	1 mol of Na	p	6.02×10^{23}
B	1 mole of H_2O	q	Atomic weight in gram
C	1 mole of NH_3	r	0.molecular weight in gram
D	No of molecules in 16g CH_4	s	Avagadro's number

(1) A-(p,q,s); B-(p,s,r);C-(p,r,s); D-(p,s)

(1) A-(p,s); B-(q,r,s);C-(p,s); D-(p,s)

(1) A-(p,s); B-(q,s);C-(p,s); D-(p,s)

(1) A-(q,s); B-(q,r,s);C-(p,s); D-(p,s)

29Rearrange the following in the order of increasing mass?

A . 6.02×10^{23} molecules of SO_2

B . 18 ml of water at 4°C

C . 11200 ml of CH_4 at STP

D . 5.6 litre of CO_2 at STP

1) a < d < c < b **1) a < b<c < d**

1) a < c < d < b **2)c < d < b < a**

30) Assertion(A):

One molal aqueous solution of glucose contains 180g of glucose in 1kg of water

Reason(R):

A solution containing one mole of solute is 1000g solvent is called one molal solution

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

31) Assertion(A):

One mole of sulphuric acid contains 32 g each of sulphur and oxygen element

Reason(R):

1 mole of sulphuric acid represents 98g of species

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

Q32. The incorrect statement among the following is

1) a molecule of a compound has atoms of different elements

2) a compound can not be separated into its constituet elements by the physical method of separation

3)a compound retains the physical properties of its constituents elements

4) the ratio of atoms of different elements in a compound is fixed

33)

Assertion(A):

The empirical mass of ethene is half of its molecular mass

Reason(R):

The empirical formula represents the simplest whole number ratio of various atoms present in a compound

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

34)

Assertion(A):

Significant figures for α200 is 3 whereas for 200 it is 1

Reason(R):

Zero at the end or right of a number are significant provided they are not on the right side of the decimal point

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

35)

Assertion(A):HCL molecule is example of heteroatomic molecules

Reason(R):

CO is example of monoatomic molecule.

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

36) one of the statements of dalton's atomic theory is given below:

"Compounds are formed when atoms of different elements combine in a fixed ratio "

Which of the following laws is not related to the statement ?

(a) law of conservation of mass

b) law of definite proportions

c) law of multiple proportions

d) Avogadro law

1. a,d

2 . b,c

3 . c,d

4 . b,d

37)

Assertion(A):

Relative atomic mass is always measured in kilo grams

Reason(R):

Atomic weight is also known as relative atomic mass

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

38) match the following prefixes with there multiple

	Column **I**		Column - **II**
A	88g of CO_2	p	0.25 mol
B	6.022×10^{23} molecules of H_2O	q	2 mol
C	5.6 L of O_2 at STP	r	3 mol
D	96g of O_2	s	1 mol

Codes :

	A	B	C	D
1	2	4	1	3
2	1	2	3	4
3	1	4	3	2
4	1	3	2	4

39) one mole of oxygen gas at STP is equal to :

a) 6.022×10^{23} molecules of oxygen

b) 6.022 x 1023 atoms of oxygen

c) 16 g of oxygen molecules

d) 32 g of oxygen

1) a & b

2) a & c

3) a & d

4) c & d

40) which of the following pairs have the same number of atoms :

a) 16 g of O_2 and 4g of H_2O

b) 16 g of O_2 and 44 g CO_2

C) 28 g of N_2 and 32 g of O_2

D) 12 g of C and 23 g of Na

1) a & b

2) b & c

3) b & d

4) c & d

41)

Assertion(A):

The molar volume of gas is equal to 22.4 Cm^3

Reason(R):

The relative molecular mass of gas is twice its vapour density

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

42)

Assertion(A):

Molecular formula gives formation about number of atoms present in molecules

Reason(R):

Molecular formula of blue vitrol is $CuSO_4$ $5H_2O$

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

43) the incorrect statement among the following is :

1) the molecule of a compound has atoms of different elements

2) a compound can not be separated into its constituent elements by the physical method of seperation

3) a compound retains the physical properties of its constituent elements

4)the ratio of atoms of different elements in compound is fixed

44)

Assertion(A):

The number of molecules in 2 moles of NH_3 is equal to the number of molecules im 4 moles of CH_4

Reason(R):

Both are chemically similar species

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

45)

Assertion(A):

Atomic mass is expressed in atomic mass unit (a.m.u)

Reason(R):

Atomic mass unit is defined as 1/12 the mass of carbon atom c -12

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

46)

Assertion(A):

One mole of gas is equal to 22.4 litre at STP

Reason(R):

Mass of one atom is equal to atomic number per atomic mass number

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

47) Statement I : equivalent of $K_2Cr_2O_2$ has 1 equivalent of K Cr and O each

Statement II – A species contains same number of eqivalents of its components

1) Statement 1 is true, statement 2 is true,statement 2 is correct explanation for statement 1

2) Statement 1 is true statement is true ,statement 2 is NOT a correct explanation for statement 1

3)Statement 1 is true,statement 2 is false

4)Statement 1 is false statement 2 is false

48) which of the following is correct ?

1) the sum of mole fractions of all the components in a solution is always unity

2) mole fraction depends upon teampreture

3)mole fraction is always negative

4)mole fraction is independent of the content of solute in the solution

49) match the column I & II

	Column **I**		Column - **II**
A	32gm each of O_2 and S	p	2 moles of Fe
B	2 gram molecule of $K_3[Fe(CN)6]$	q	3 moles of ozone molecule
C	144 gm of oxygen atom	r	1mole
D	From 168 g of iron 6.023 1023 atoms of iron are removed the iron left	s	12 moles of carbon atoms

(1) A-r B-p,s C-q D-p

(2) A-q B-r C-p,s D-s

(3) A-s B-p C-r D-q,r

(4) A-p,q B-r C-s D-q

50)

Assertion(A):

1 mole of any gas occupies 22.4 lit at NTP

Reason(R):

In 1502 cm, zero is significant

1) both (A) and (R) are correct but (R) is not the correct explanation of (A)

2)(A) is correct but (R) is not correct

3)(A) is not correct but (R) is correct

4)Both (A) and (R) are correct and (R) is the correct explanation of (A)

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