



CHEMISTRY

BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2017 SET B

Science

1. Fill in the blanks in the given table by choosing an appropriate option.

S. No.	Salt	Parent acid	Parent base	pH of aq. salt solution
1.	NaClO	HClO	NaOH	<u>i</u>
2.	<u>ii</u>	HCl	Cu(OH) ₂	<u>iii</u>
3.	NH ₄ HCO ₃	<u>iv</u>	<u>v</u>	≈7
4.	CH ₃ COOK	CH ₃ COOH	KOH	<u>vi</u>

	(i)	(ii)	(iii)	(iv)	(v)	(vi)
A.	7	CuCl ₂	>7	NH ₃	CO ₂	7
B.	>7	CuCl ₂	<7	H ₂ CO ₃	NH ₄ OH	>7
C.	<7	CuO	>7	NH ₄ OH	H ₂ CO ₃	7
D.	>7	CuCl ₂	>7	NH ₃	HCl	>7



Watch Video Solution

2. If melting point and boiling point of substance X are -82°C and -60°C respectively then, which of the following is correct for the

substance X?

X at $-70\text{ }^{\circ}\text{C}$	X at $-50\text{ }^{\circ}\text{C}$
A. Particles are tightly packed and not moving	Particles are loosely packed and randomly moving
B. Has definite volume but no definite shape	Neither has definite volume nor definite shape
C. Possesses fluidity	Possesses rigidity
D. Is almost incompressible	Is completely incompressible



[Watch Video Solution](#)

3. Read the given passage and fill in the blanks by choosing an appropriate option.

Bleaching powder is a ___(i)___ powder.

When exposed to air, it reacts with ___(ii)___ of

the air to liberate Cl_2 gas. It is ___(iii)___ in

cold water and milky appearance of the solution is due to the presence of unreacted ___(iv)___. It reacts with HCl and H_2SO_4 liberating ___(v)___ gas.

	(i)	(ii)	(iii)	(iv)	(v)
A.	Blue crystalline	Moisture	Soluble	CO_2	SO_2
B.	Yellowish white	CO_2	Soluble	Lime	Cl_2
C.	White	O_2	Insoluble	Lime	Cl_2
D.	Yellow	Moisture	Soluble	CO_2	Cl_2



[Watch Video Solution](#)

4. The ratio of the number of molecules in 4 g of hydrogen to the number of molecules in 5.6 dm^3 of oxygen at standard temperature and

pressure is [Given: Atomic mass of H = 1 u and
O = 16 u]

A. 2: 1

B. 3: 4

C. 1: 4

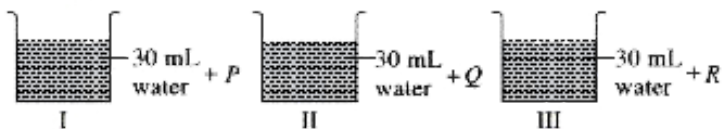
D. 8: 1

Answer: D



Watch Video Solution

5. Rohan added different substances P, Q and R to three beakers each containing 30 mL of water as shown in the figure.



He observed that the temperature of beakers I and II increases while that of beaker III decreases. Substances P, Q and R could be respectively



C. Na_2SO_4 , CaO , $CuSO_4$, $5H_2O$

D. $NaNO_3$, KCl , K_2SO_4

Answer: C



Watch Video Solution

6. The boiling points of some gases are given in the table. If their liquid mixture is subjected to fractional distillation, the order in which

gases will distil over is

Gas	B.pt. (°C)
Kr	-153
Ne	-246
N	-196
O	-183

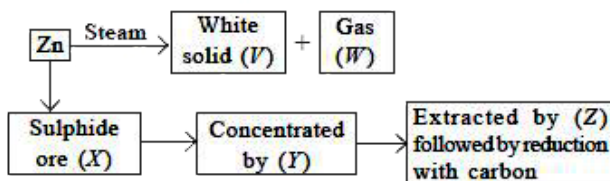
- A. kr, O, N , Ne
- B. O, N , Kr , Ne
- C. Ne , N , Kr , O
- D. Ne, N , O , Kr

Answer: D



Watch Video Solution

7. Study the given flow chart carefully and identify V, W, X, Y and Z.



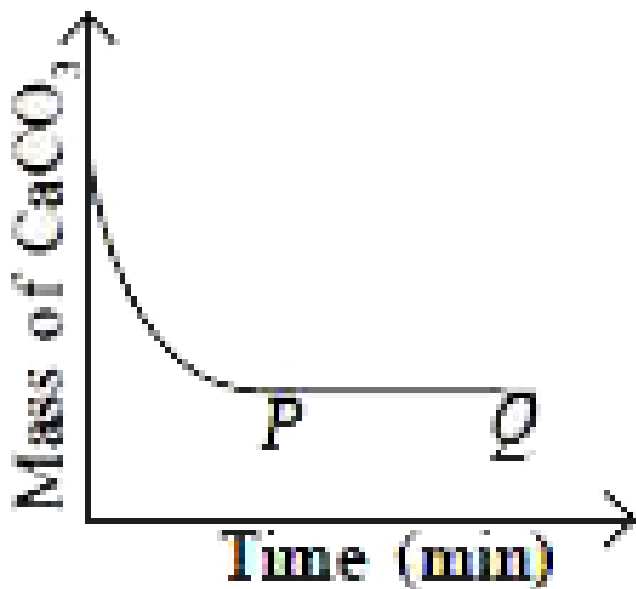
- | | V | W | X | Y | Z |
|----|-------------------------|----------------------|-------------|------------------|-------------|
| A. | Zn(OH)_2 | H_2 | Cinnabar | Leaching | Roasting |
| B. | ZnO | H_2 | Zinc blende | Froth floatation | Roasting |
| C. | Zn_2O_3 | H_2O | Galena | Froth floatation | Calcination |
| D. | ZnO | H_2 | Calamine | Calcination | Roasting |



Watch Video Solution

8. Kunal, a class 10 student studied the reaction between marble chips and dilute HCl. He took 50 g of marble chips and 100 mL of 0.1 molar HCl solution. The given graph shows how the total mass of marble chips varies with time as the reaction proceeds.

Which of the following statements are incorrect ?



- I. More and more CO_2 gas is evolved along PQ.
- II. CaCO_3 remains unreacted after point P.
- III. Reaction gets completed at point P.
- IV. Dilute HCl remains unreacted after point P.

A. I and IV only

B. II and III only

C. I, II and IV only

D. II, III and IV only

Answer: A



Watch Video Solution

9. A part of the periodic table is represented

as:

H							He
P						R	
Q						S	T

In the given section of the periodic table, the

most metallic element, the most non-metallic element, the smallest atom and the atom which has complete octet in M shell are respectively

A. Q, R, R and T

B. R, P, P and S

C. Q, R, P and T

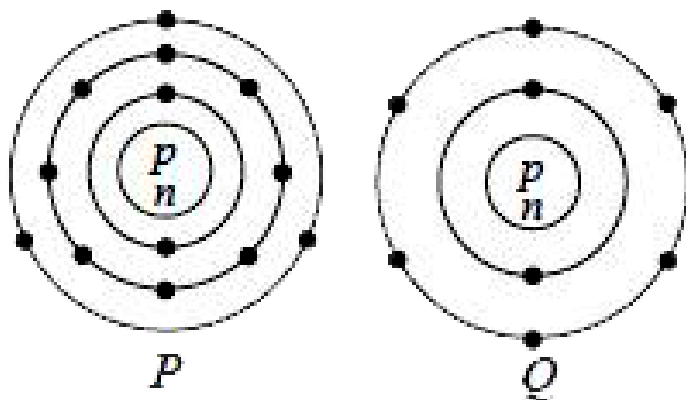
D. P, R, S and T.

Answer: A



Watch Video Solution

10. Atomic structures of elements P and Q are schematically represented as:



Which of the following statements is/are P correct?

- I. P and Q will form the compound P_2Q_3 . II. P will form phosphide with formula PP_3 . III. Q exists as a divalent cation.

IV. P can form P^{5-} anion to attain the noble gas configuration.

A. I and II only

B. I and III only

C. III and IV only

D. I only

Answer: D



Watch Video Solution

11. Consider the following reactions :

I. Ethanol is oxidised by acidified $K_2Cr_2O_7$

II. Methane undergoes complete combustion.

III. Ethanoic acid reacts with anhyd. Na_2CO_3 .

IV. Ethanol reacts with sodium metal.

Reaction(s) in which water is one of the products is/are

A. I and II only

B. I, II and III only

C. III and IV only

D. II only.

Answer: B



Watch Video Solution

12. The percentage by mass of water of crystallisation in hydrated copper sulphate is

[Given: Atomic mass of Cu = 63.5 u, H = 1 u, O = 16 u and S = 32 u]

A. 42 %

B. 32 %

C. 63 %

D. 24 %

Answer: B



Watch Video Solution

Achievers Section

1. When an alcohol is heated with excess of conc. H_2SO_4 at about $170^\circ C$, it gets

dehydrated to form alkene(s). In this reaction, conc. H_2SO_4 acts as a dehydrating agent.

Which of the following statements is/are correct when 2-butanol undergoes dehydration?

I. Only one alkene having same number of carbon atoms as in 2-butanol is formed.

II. Two alkenes having different structural formulae but same molecular formula are formed. Only one alkene having one carbon atom less than 2-butanol is formed.

IV. Two alkenes are formed out of which one is terminal and other is non-terminal.

V. Two alkenes having the same percentage composition by mass are formed.

A. II, IV and V only

B. III only

C. II and IV only

D. I only

Answer: A



Watch Video Solution

2. When an alcohol is heated with excess of conc. H_2SO_4 at about $170^\circ C$, it gets dehydrated to form alkene(s). In this reaction, conc. H_2SO_4 acts as a dehydrating agent.

If boiling point of an alkene formed in a dehydration reaction of an alcohol is $-6^\circ C$ then, which of the following could be the boiling points of succeeding and preceding members of this alkene in its homologous series respectively

A. $-48^\circ C$ and $-104^\circ C$

B. $30^{\circ}C$ and $64^{\circ}C$

C. $-104^{\circ}C$ and $-48^{\circ}C$

D. 30° and -48°

Answer: D



Watch Video Solution