



CHEMISTRY

BOOKS - PEARSON IIT JEE

FOUNDATION

**SOME IMPORTANT ELEMENTS AND
THEIR COMPOUNDS**

Very Short Answer Typ Question

1. How are CO_2 and dust particles removed from air before subjecting air to liquefaction



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2. In rat poison, phosphorous is used in the form of _____



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3. Give the existence of chlorine in the combined state in nature?



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4. Name the most commonly found phosphates in nature.



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5. Explain the reaction of chlorine with magnesium



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6. In what forms does sulphur occur in the combined state in nature?



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7. List the physical properties of plastic sulphur.



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8. How can mercuric sulphide be prepared?



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9. The bacterial Conversion of Nitrogen into nitrogen compounds is called _____



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10. What happens when chlorine reacts with phosphorus



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11. Explain the acidic nature of sulphur dioxide based on its reactivity with water



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12. Give a brief description of the structure of white phosphorous



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13. Explain the chemical reaction of chlorine with hydrogen sulphide.



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14. Why do soaps not work in hard water ?





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15. What is the valency of nitrogen in ammonia? What is CAN? How is it useful?



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16. The transition temperature of rhombic and monoclinic sulphur _____



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17. Define glass blowing. What are the different methods employed for glass blowing



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18. What are the advantages of synthetic fibres over natural fibres



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19. Formula of fluorapatite is _____



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20. How does nitrogen occur in the combined state



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21. Mention the chemical formulae of

(i) Phosgene

(ii) tear gas and

(iii) chloroform



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22. What is the composition of ceramics?



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23. What are the major and minor plant nutrients? Give three examples for each



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24. Write the balanced chemical reaction of the burning of ammonia in oxygen



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25. What is nitrolim? How is it obtained



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26. _____ Process is used to extract sulphur from deposits near the earth's crust



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27. Discuss the physical properties of chlorine



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28. How is principle of counter currents is usefhl in Bachmann plant?



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29. Why are dense white fumes formed when hydrogen chloride is dissolved in moist air



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30. Equal volumes of nitrogen and oxygen react to give _____



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Short Answer Type Question

1. Write the equation for the following

(i) Addition of concentrated HNO_3 to copper

(ii) Addition of dilute HNO_3 to zinc



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2. Write a note on safety matches



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3. Describe how sulphur is extracted using the Sicilian process.



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4. Differentiate between rhombic and monoclinic sulphur



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5. How is H_2S used as an analytical reagent?



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6. Mention the uses of chlorine



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7. Explain the reaction of chlorine gas with turpentine.



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8. Name the products formed in the following reactions

(i) Reaction of sodium nitrate with ammonium sulphate

(ii) Reaction of potassium iodide with nitric acid

(iii) Addition of HNO_3 to sulphur



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9. Explain the cleansing action of soaps.



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10. Write two uses of ammonia.



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11. Discuss briefly the chemical properties of H_2S .



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12. Explain various types of chemical fertilizers





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13. Why does sulphur dioxide act as a bleaching agent?



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14. What is plastic? Write a short note on different categories of plastic.



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15. Explain with equations the electrical process for the extraction of phosphorous



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Essay Type Question

1. Write in detail about the compounds formed by phosphorous and their uses.



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2. Explain in detail how sulphuric acid is prepared by the Contact process



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3. Explain the construction and working of 3 Nelson cell.



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4. Discuss the method of preparation of bleaching powder.



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5. Explain the basic working of the Castner-Kellner cell, used for producing Naoh (sodium hydroxide).



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1. The chemical formula of nitre is



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2. Ammonia on reaction with excess chlorine gives white dense fumes of



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3. Sodium is deposited at the _____ during the electrolysis of brine solution



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4. Zinc sulphate solution on passage of H_2S gives flesh coloured precipitate. True or False?



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5. Generally laboratory apparatus are made with borosilicate. True or false?



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6. Urea is a nitrogenous fertilizer. True or False?



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7. Liquid _____ is used for preserving biological specimen



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8. Density of White phosphorus is _____ than red phosphorus



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9. In Castner-Kellner cell, sodium ions react with mercury to form _____



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10. In Nelson cell H_2 is liberated at _____



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11. Oxygen required. for the combustion of safety matches can be produced from



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12. _____ bacteria convert atmospheric nitrogen into nitrogenous compounds



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13. Ammonia on reaction with potassium gives



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Column A	Column B
A Phosgene	() a. Heating metallic chlorides with Conc. H_2SO_4
B $CaOCl_2$	() b. Reaction of HCl with NaOH
C NaOCl	() c. $COCl_2$
D HOCl	() d. Reaction of phosphorus with chlorine
E Cl_2	() e. CCl_3, NO_2
F Tear gas	() f. Reaction of Cl_2 on slaked lime
G PCl_3	() g. Nascent oxygen
14. H HCl	() h. Oxidation of HCl by $K_2Cr_2O_7$



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15. Which of following statements regarding glass is false

A. Glass has high viscosity and hence exists in solid state.

B. Glass has no definite melting point.

C. Arrangement of silicate units in glass is similar to that in liquid state

D. Glass has regular crystalline arrangement and hence exists as a solid

Answer:



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16. Phosphor bronze is an alloy of

- A. P, Cu and Sn
- B. P, Cu and Sb
- C. P, Zn and Sn
- D. P, Cu and As

Answer:



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17. Which of the following loses its activity on storing for a long time ?

- A. Chlorine
- B. Hydrogen Chloride
- C. Bleaching powder
- D. Sodium hydroxide

Answer:



18. Gypsum is

- A. hydrated magnesium sulphate
- B. anhydrous magnisium sulphate
- C. hydrated calcium Sulphate
- D. anhydrous calcium sulphate

Answer:



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19. Clay shows plasticity when

- A. right proportion of Water is added to it.
- B. it is fired (strongly heated
- C. it is dried at room temperature after kneading.
- D. it is glazed

Answer:



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20. Which of the following is false regarding epoxy resin?

A. It is a thermosetting polymer

B. It is less brittle in nature

C. It has relatively weak bands.

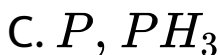
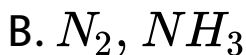
D. It has cross linking among polymeric chains

Answer:



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21. When Mg is burnt in the atmosphere of an element X white powder is obtained. When this is dissolved in water it gives a compound Y with pungent smell. What are X and Y?



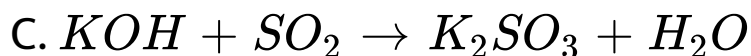
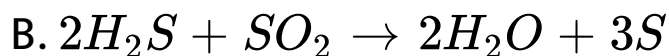
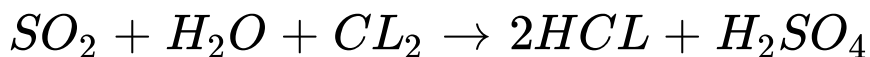
Answer:



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22. The reducing property of SO_2 is shown in which of the following reactions

A.



D. None of the above

Answer:



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23. The transparency of glass is attributed to which of the following properties of glass?

A. High viscosity

B. Regular pattern of arrangement of silicate units

C. Irregular pattern of arrangement of silicate units

D. High coefficient of thermal expansion

Answer:



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24. A soil is supplied with ammonium phosphate fertilizer. Which of the following types of bacteria is not involved in the process of the absorption of this fertilizer by plants

A. Nitrifying bacteria

B. Nitrosifying bacteria

C. Nitrifying bacteria

D. None of these

Answer:



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25. The gas liberated when concentrated sulphuric acid is reacted with copper

A. H_2

B. SO_3

C. H_2S

D. SO_2

Answer:



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26. A soil is highly deficient in nitrogen. The crop requires nitrogen for immediate requirement as well as long term requirement. Which among the following is the most suitable fertilizer for the soil?

A. Urea

B. Ammonium sulphate

C. Ammonium nitrate

D. Calcium ammonium nitrate

Answer:



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27. The process of glazing of ceramic article does not

A. make it impervious

B. impart glossy appearance

C. make it impact resistant

D. All the above

Answer:



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28. Sulphur, on heating follows Which of the following sequence?

A. solid → thick viscous liquid → thin

liquid → gas

B. solid → semi solid → liquid → gas

C. solid → thin liquid → thick viscous

→ thin liquid → gas

D. solid → powdery solid → thick

viscous liquid → gas

Answer:



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29. Which among the following is true With regard to thermoplastics and thermosetting

A. Thermosetting resins are permanent setting resins but thermoplastics are not, since they can be softened on cooling

B. Thermoplastics are less brittle when compared to thermosetting due to the absence of long chain polymers.

C. Thermosetting are more brittle When compared to thermoplastics due to the

presence of strong bonds.

D. The chemical nature of thermoplastics can be altered by repeated heating and cooling

Answer:



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30. Steps involved in the Frasch process are given below. Arrange them in the correct sequence ,

Three melts the sulphur below melting point

The sulphur foam formed rises in the middle pipe and is collected.

Superheated steam under pressure is sent through the outermost pipe

Hot compressed air is sent through the innermost pipe, which froths up the molten sulphur below

Three concentric pipes are drilled through the ground to the sulphur deposits

A. e c a d b

B. e a d c b

C. e a d b c

D. e d a c b

Answer:



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31. Different steps involved in the manufacture of sulphuric acid in contact process are given below. Arrange them in the correct sequence

Formation of oleum

Oxidation of SO_2 ,

Hydrolysis of oleum

Combustion of sulphur

A. d a c b

B. a d b c

C. d b a c

D. a d c b

Answer:



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32. Arrange the different forms of sulphur formed during heating followed by cooling

Monoclinic sulphur

Flower of sulphur

Rhombic sulphur

sulphur vapour

Lambda sulphur

Monoclinic sulphur

A. e c f a d b

B. c f e a d b

C. c f a e d b

D. c f e a b d

Answer:



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33. Slaked lime on reaction with ammonium chloride gives

A. calcium hydroxide and ammonia

B. calcium hydroxide and nitrogen

C. calcium chloride and nitrogen dioxide

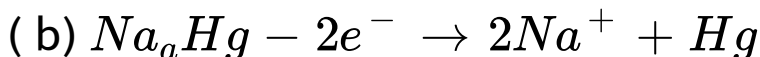
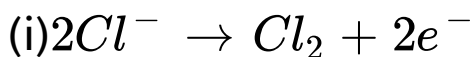
D. calcium chloride and ammonia

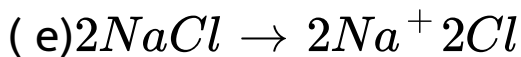
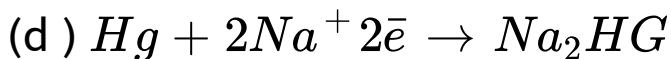
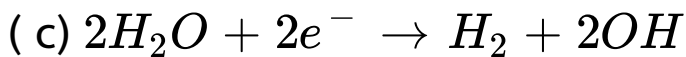
Answer:



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34. Different steps involved in the mechanism of preparation of sodium hydroxide by Castner process are given below. Arrange them in correct sequence .





A. e d c b a f

B. e b c a d f

C. d b a e c f

D. e a d b c f

Answer:



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35. The steps involved in the manufacture of glass are given below. Arrange them in the correct sequence

Moderate cooling

Addition of cullet

Formation of respective silicates

Preparation of fine powder of raw materials

Heating of cullet at about 1600K to 1700K

A. d b e c a

B. d e b a c

C. d e c b a

D. d b c e a

Answer:



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36. Different processes involved in the manufacture of pottery or ceramic materials are given below. Arrange them in a proper sequence.

Change in the physical and chemical properties

of the substance

Heating to a suitable high temperature

Drying of the mixture

Preparation of mixture by adding water to raw materials

A. b a d c

B. d c b a

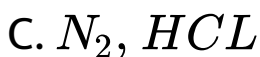
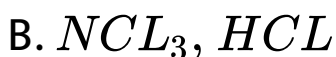
C. d c a b

D. c d b a

Answer:



37. The compounds formed when ammonia reacts with excess of chlorine are



Answer:



38. In electrothermic reduction, calcium phosphate is mixed with

A. sand, sulphur

B. coke, sand

C. sulphur, coke

D. sulphur, phosphorus

Answer:



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39. HNO_3 on reaction with phosphorus gives

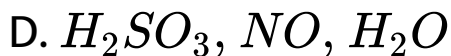
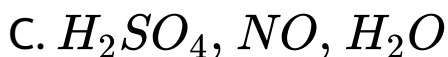
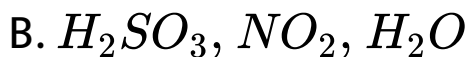
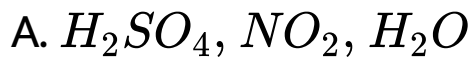
- A. phosphorus acid
- B. phosphoric acid
- C. metaphosphoric acid
- D. hypophosphoric acid

Answer:



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40. Sulphur on reaction with HNO_3 gives



Answer:



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41. Which of the following metal liberates hydrogen when treated with dilute H_2SO_4 ?

A. Cu

B. Zn

C. Mg

D. Fe

Answer:



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42. The bleaching action of bleaching powder is due to the formation of

A. Chlorate ion

B. chloride ion

C. chlorite ion

D. hypochlorite ion

Answer:



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43. Which among the following types of glass is used in the manufacture of doors and windows Of automobiles?

A. Laminated glass

B. Fibre glass

C. Foam glass

D. Opaque glass

Answer:



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44. Which of the following plastics can be recycled?

A. Melamine

B. Polyethylene

C. Bakelite

D. Both (1) and (2)

Answer:



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1. Two moist red roses are taken in two containers A and B into which anhydride of sulphurous acid and a greenish yellow coloured gas are passed respectively. What changes are observed With respect to two roses in A and B? How do you account for these changes?



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2. Among white phosphorous and red phosphorous which is more preferable for use in match sticks? Give reason in support of your answer



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3. When a burning paraffin candle is introduced into two jars containing oxygen and chlorine gases separately, what

observations can be made? Explain with appropriate reasons



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4. When chlorine reacts with hot and concentrated caustic alkali XOH , one of the products, Y is formed by this reaction is used as an oxidiser in the match industry. Identify the compound Y and the element X .



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5. Two samples of sulphur are heated separately starting at $60^{\circ}C$. One sample is found to melt at $114^{\circ}C$ and the other one melts at $119^{\circ}C$. How do you account for this



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6. Bone ash contains both micro and macro nutrients in it. However it is not used as a fertilizer. It is converted to superphosphate of lime which is an important fertilizer. Give reason



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7. Iron rod is dipped in some HNO_3 . Then it is made to react with copper sulphate solution.

What observations are found in this process?

Give reasons in support of your answer



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8. Noble metals like gold and platinum are insoluble both in HCl and in HNO_3 . But, they

are soluble in aquaregia. Justify

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9. Farmers are advised to grow beans or peas plants in crop rotation. Give reasons in support of your answer.

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10. When coppcr metal is subjected to treatment With nitric acid, differenr. oxides of

nitrogen are liberated with different concentrations of nitric acid. Explain the reason



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11. Ammonium chloride on reaction with quick lime gives a gas X which turns red litmus blue. Excess of X and greenish yellow gas are taken in container A and excess of greenish yellow gas and X are taken in container B which on reaction gives different sets of products. When

moist litmus paper is introduced into the jars, it turned to red in jar B . Identify the reactions involved and give equations.



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12. Hydrogen chloride gas can be subjected to drying only with conc. H_2SO_4 but not with quick lime or phosphorus pentoxide. Explain



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13. Why are soaps ineffective during usage with hard water which contains soluble salts of calcium and magnesium?



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14. When a binary salt of iron reacts with hydrochloric acid it gives out a gas which can be used for identification of many metal ions. Identify the salt, the gas and explain how it is useful in detecting metal ions.





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15. Nitric acid is colourless when freshly prepared. But, on long standing, it turns to yellow. How do you account for this?



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16. Two research scholars Rony and Jony, needed red phosphorus and White phosphorus respectively, for a research programme. Both of them went to a chemical

store to purchase red phosphorus and white phosphorus. The store keeper gave a normal glass bottle containing red phosphorus and a glass bottle containing white phosphorus which was kept in water. Justify the above observations



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17. A solid nonmetal A on exposure to air forms a compound B which on dissolution in water forms the highest oxy acid C. Identify

different type of salts which can be formed when C reacts with caustic potash



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18. Though P_2O_5 is a very good desiccant, its utility for drying is limited. Give reasons



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19. In an industry, H_2S gas is mixed with chlorine gas before releasing it into the

atmosphere. Give the appropriate reason.



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20. A solid nonmetal X on burning gives a compound Y which under high temperature and pressure conditions in presence of catalyst gets oxidised to Z. Z can give the acid of the nonmetal on dissolution in water. However, it is not a preferred reaction for the preparation of the acid. Give reason and explain the method employed for the

preparation of the it: acid from Z and mention the precautions required during dilution of the acid.



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21. Concentrated HNO_3 and concentrated H_2SO_4 can't be used for the preparation of H_2S . Give reason



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22. Rekha and Lekha took two fresh red roses and kept them in two containers A and B into which anhydride of sulphurous acid and a greenish yellow coloured gas are passed respectively. After a few minutes these two roses lose their colour but on being exposed to the atmosphere, it was observed that Rekha's rose regained its colour but Lekha's rose did not. How do you account for the above changes?



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23. During the summer vacation, a chemistry laboratory assistant stored the chemicals in their respective bottles. After a few months it was observed that the lids of the bottles in which sodium hydroxide was stored were stuck tight. He went to a lecturer for finding the solution for this problem. What solution could be suggested by the lecturer



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24. Ranchu's father is working in a fertilizer industry. One day at home he heard his father making suggestion to his colleague that between nitrate salts and ammonium salts, nitrate salts are preferable for use as a fertilizer. The next day Ranchu asked his brother the reason for their father's suggestion. What answer did his brother give



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25. Thermoplastics can be moulded again and again where as thermosettings cannot be moulded. Give reason



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Level 3

1. Two non metallic gaseous elements react in 1 : 3 ratio to give another gas X . A mixture of X and oxygen is taken in a jar and a burning

match stick is introduced into it. Another sample of the same mixture containing large excess of O_2 , is passed over heated platinum. The mixture of gaseous products is dissolved in water to give Y and Z which are colourless. Z on long standing turns to yellow. Identify X, Y and Z by giving reasons wherever necessary. Also identify the exothermic reaction in the above sequence.



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2. Both slow cooling and rapid cooling of glass are avoided. How do you account for this?



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3. Why is common salt sprinkled over pots during the heating process while making pots?



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4. Phosphorite rock when treated with phosphoric acid gives a fertilizer which is preferred to a fertiliser obtained from the same mineral on treatment with conc. sulphuric acid justify



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5. Why is the compound AgCl used in photo gray lenses



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6. Bleaching powder in cold water is an excellent bleaching agent. But it cannot act as a good bleaching agent when dissolved in hot water. Why?



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7. Hydrofluoric acid cannot be stored in glass bottles like all other acids. Give reason.



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8. Certain phosphates are helpful in making hard water soft. Which phosphates are used and how do they help in making water soft?



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9. Both H_2SO_4 and HNO_3 cause damage to skin when the skin comes in contact with them. Compare and contrast the reasons



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10. Nitric acid attacks all the metals except noble metals but the nature of products of same metal along with corresponding nitrates depends upon the concentration of HNO_3 . Explain.



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Example

1. Farmers are advised to include bean plants in the crop rotation system. What purpose

does it serve?



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2. When molten sulphur (above $195^{\circ}C$) is poured in water, an amorphous variety of sulphur is formed. Give the reason.



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3. The viscosity of sulphur increases from $160^{\circ}C$ to $195^{\circ}C$ and subsequently decreases

above this range. Explain with appropriate reasons.



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4. When not used for a long time, bleaching powder loses its bleaching quality. Justify.



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5. Why is common salt sprinkled over pots during the heating process while making

pots?



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6. Why are plastic containers preferred for storing chemicals?



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7. Why are the materials made of plastic more in use rather than other substances?



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8. Why are handles of screw drivers used for electrical works made of plastics?



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9. Mention two examples of plastics in the medical field.



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10. Name the special plastic used for non-stick coating pans.



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Test Your Concepts Very Short Answer Type Questions

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27. Equal volumes of nitrogen and oxygen react to give _____



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Test Your Concepts Short Answer Type Questions

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6. Explain the reaction of chlorine gas with turpentine.



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7. Name the products formed in the following reactions:

reaction of sodium nitrate with ammonium sulphate



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8. Name the products formed in the following reactions:

reaction of potassium iodide with nitric acid



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9. Name the products formed in the following reactions:

addition of HNO_3 to sulphur



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10. Write two uses of ammonia.



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11. Discuss briefly the chemical properties of H_2S .



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12. Why does sulphur dioxide act as a bleaching agent?



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Test Your Concepts Essay Type Questions

1. Write in detail about the compounds formed by phosphorous and their uses.



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2. Discuss the method of preparation of bleaching powder.



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Concept Application Level 1 True Or False

1. The ignition temperature of red phosphorous is less than that of white phosphorous.



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2. The chemical formula of nitre is $NaNO_3$.



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3. Ammonia on reaction with excess chlorine gives white dense fumes.



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4. Sodium is deposited at the cathode during the electrolysis of brine solution.



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5. Zinc sulphate solution on passage of H_2S gives a flesh-coloured precipitate.



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6. Generally laboratory apparatus are made with borosilicate. True or false?



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7. Urea is a nitrogenous fertilizer. True or False?



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Concept Application Level 1 Fill In The Blanks

1. Liquid _____ is used for preserving biological specimen



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2. Density of White phosphorus is _____ than red phosphorus



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3. In Castner-Kellner cell, sodium ions react with mercury to form _____



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4. In Nelson cell H_2 is liberated at _____



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5. Oxygen required. for the combustion of safety matches can be produced from _____



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6. _____ bacteria convert atmospheric nitrogen into nitrogenous compounds



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7. Ammonia on reaction with potassium gives



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Concept Application Level 1

1. Match the entries in column A with the appropriate ones in Column B.

Column A		Column B
A. Phosgene	()	a. Heating metallic chlorides with conc. H_2SO_4
B. CaOCl_2	()	b. Reaction of HCl with NaOH
C. NaOCl	()	c. COCl_2
D. HOCl	()	d. Reaction of phosphorus with chlorine
E. Cl_2	()	e. $\text{CCl}_3, \text{NO}_2$
F. Tear gas	()	f. Reaction of Cl_2 on slaked lime
G. PCl_5	()	g. Nascent oxygen
H. HCl	()	h. Oxidation of HCl by $\text{K}_2\text{Cr}_2\text{O}_7$



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Concept Application Level 1 Select The Correct Alternative

1. Which of following statements regarding glass is false?

A. Glass has high viscosity, and hence, exists in a solid state.

B. Glass has no definite melting point.

C. Arrangement of silicate units in glass is similar to that in liquid state.

D. Glass has regular crystalline arrangement, and hence, exists as a

solid.

Answer: D



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2. Phosphor bronze is an alloy of

A. P, Cu and Sn

B. P, Cu and Sb

C. P, Zn and Sn

D. P, Cu and As

Answer: A



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3. Which of the following loses its activity on storing for a long time ?

A. chlorine

B. hydrogen chloride

C. bleaching powder

D. sodium hydroxide

Answer: C



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4. Gypsum is

- A. hydrated magnesium sulphate
- B. anhydrous magnesium sulphate
- C. hydrated calcium sulphate
- D. anhydrous calcium sulphate

Answer: C



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5. Clay shows plasticity when

- A. right proportion of water is added to it
- B. it is fired (strongly heated)
- C. it is dried at room temperature after kneading
- D. it is glazed

Answer: A



6. Which of the following is false regarding epoxy resin?

A. It is a thermosetting polymer.

B. It is less brittle in nature.

C. It has relatively weak bonds.

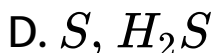
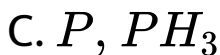
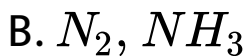
D. It has cross-linking among polymeric chains.

Answer: D



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7. When Mg is burnt in the atmosphere of an element X white powder is obtained. When this is dissolved in water it gives a compound Y with pungent smell. What are X and Y?

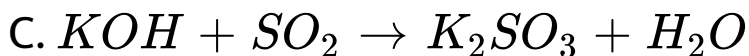
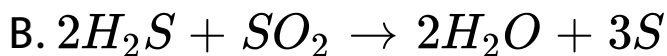
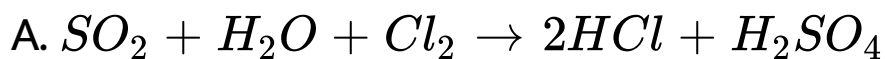


Answer: B



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8. The reducing property of SO_2 is shown in which of the following reactions



D. none of the above

Answer: A



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9. The transparency of glass is attributed to which of the following properties of glass?

A. high viscosity

B. regular pattern of arrangement of silicate units

C. irregular pattern of arrangement of silicate units

D. high coefficient of thermal expansion

Answer: C



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10. A soil is supplied with ammonium phosphate fertilizer. Which of the following types of bacteria is not involved in the process of the absorption of this fertilizer by plants

A. ammonifying bacteria

B. nitrosifying bacteria

C. nitrifying bacteria

D. none of these

Answer: A



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11. The gas liberated when concentrated sulphuric acid is reacted with copper

A. H_2

B. SO_3

C. H_2S

D. SO_2

Answer: D



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12. A soil is highly deficient in nitrogen. The crop requires nitrogen for immediate requirement as well as long term requirement

. Which among the following is the most suitable fertilizer for the soil ?

A. urea

B. ammonium sulphate

C. ammonium nitrate

D. calcium ammonium nitrate

Answer: D



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13. The process of glazing of ceramic article does not

- A. make it impervious
- B. impart glossy appearance
- C. make it impact resistant
- D. all of these

Answer: C



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14. Sulphur, on heating follows Which of the following sequence?

A. solid → thick viscous liquid → thin liquid → gas

B. solid → semisolid → liquid → gas

C. solid → thin liquid → thick viscous → thin liquid → gas

D. solid → powdery solid → thick viscous liquid → gas

Answer: C



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15. Which among the following is true with regard to thermoplastics and thermosetting?

A. Thermosettings are permanent setting resins but thermoplastics are not since they can be softened on cooling.

B. Thermoplastics are less brittle when compared to thermosettings due to the absence of long chain polymers.

C. Thermosettings are more brittle when compared to thermoplastics due to the presence of strong bonds.

D. The chemical nature of thermoplastics can be altered by repeated heating and cooling.

Answer: C



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16. Steps involved in the Frasch process are given below. Arrange them in the correct sequence.

(1) This melts the sulphur below melting point.

(2) The sulphur foam formed rises in the middle pipe and is collected.

(3) Superheated steam under pressure is sent through the outermost pipe.

(4) Hot compressed air is sent through the innermost pipe, which froths up the molten sulphur below.

(5) Three concentric pipes are drilled through the ground to the sulphur deposits.

A. 5 3 1 4 2

B. 5 1 4 3 2

C. 5 1 4 2 3

D. 5 4 1 3 2

Answer:



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17. Different steps involved in the manufacture of sulphuric acid in contact process are given below. Arrange them in the correct sequence

Formation of oleum

Oxidation of SO_2 ,

Hydrolysis of oleum

Combustion of sulphur

A. 4 1 3 2

B. 1 4 2 3

C. 4 2 1 3

D. 1 4 3 2

Answer:



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18. Arrange the different forms of sulphur formed during heating followed by cooling

Monoclinic sulphur

Flower of sulphur

Rhombic sulphur

sulphur vapour

Lambda sulphur

Monoclinic sulphur

A. 5 3 6 1 4 2

B. 3 6 5 1 4 2

C. 3 6 1 5 4 2

D. 3 6 5 1 2 4

Answer:



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19. Slaked lime on reaction with ammonium chloride gives

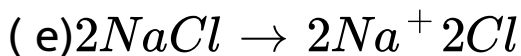
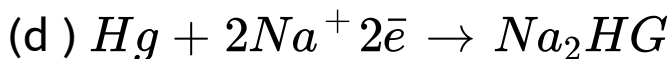
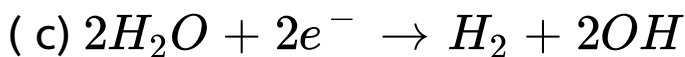
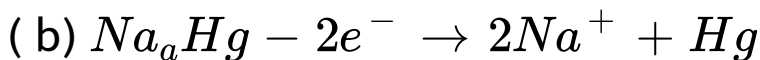
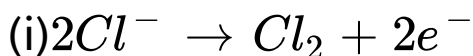
- A. calcium hydroxide and ammonia
- B. calcium hydroxide and nitrogen
- C. calcium chloride and nitrogen dioxide
- D. calcium chloride and ammonia

Answer:



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20. Different steps involved in the mechanism of preparation of sodium hydroxide by Castner process are given below. Arrange them in correct sequence.



A. 5 4 3 2 1 6

B. 5 2 3 1 4 6

C. 4 2 1 5 3 6

D. 5 1 4 2 3 6

Answer:



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21. The steps involved in the manufacture of glass are given below. Arrange them in the correct sequence

Moderate colling

Addition of cullet

Formation of respective silicates

Preparation of fine powder of raw materials

Heating of cullet at about 1600K to 1700K

A. 4 2 5 3 1

B. 4 5 2 1 3

C. 4 5 3 2 1

D. 4 2 3 5 1

Answer:



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22. Different processes involved in the manufacture of pottery or ceramic materials are given below. Arrange them in a proper sequence.

(1) change in the physical and chemical properties of the substances

(2) heating to a suitable high temperature

(3) drying of the mixture

(4) preparation of mixture by adding water to raw materials

A. 2 1 4 3

B. 4 3 2 1

C. 4 3 1 2

D. 3 4 2 1

Answer:



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23. The compounds formed when ammonia reacts with excess of chlorine are

A. NH_4Cl , HCl

B. NCl_3 , HCl

C. N_2 , HCl

D. NH_4Cl , NCl_3

Answer:



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24. In electrolytic reduction, calcium phosphate is mixed with

A. sand, sulphur

B. coke, sand

C. sulphur, coke

D. sulphur, phosphorus

Answer:



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25. HNO_3 on reaction with phosphorus gives

A. phosphorus acid

B. phosphoric acid

C. metaphosphoric acid

D. hypophosphoric acid

Answer:



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26. Sulphur on reaction with HNO_3 gives

A. H_2SO_4 , NO_2 , H_2O

B. H_2SO_3 , NO_2 , H_2O

C. H_2SO_4 , NO , H_2O

D. H_2SO_3 , NO , H_2O

Answer:



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27. Which of the following metal liberates hydrogen when treated with dilute H_2SO_4 ?

A. Cu

B. Zn

C. Mg

D. Fe

Answer:



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28. The bleaching action of bleaching powder is due to the formation of

A. chlorate ion

B. chloride ion

C. chlorite ion

D. hypochlorite ion

Answer:



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29. Which among the following types of glass is used in the manufacture of doors and windows of automobiles?

A. laminated glass

B. fibre glass

C. foam glass

D. opaque glass

Answer:



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30. Which of the following plastics can be recycled?

A. melamine

B. polyethylene

C. bakelite

D. Both (a) and (b)

Answer:



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Concept Application Level 2

1. Two moist red roses are taken in two containers A and B into which anhydride of

sulphurous acid and a greenish yellow coloured gas are passed, respectively. What changes are observed with respect to two roses in A and B? How do you account for these changes?



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2. Among white phosphorous and red phosphorous which is more preferable for use in match sticks? Give a reason in support of your answer.



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3. When a burning paraffin candle is introduced into two jars containing oxygen and chlorine gases separately, what observations can be made? Explain with appropriate reasons.



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4. When chlorine reacts with hot and concentrated caustic alkali XOH , one of the

products, Y is formed by this reaction is used as an oxidizer in the match industry. Identify the compound Y and the element X.



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5. Two samples of sulphur are heated separately starting at $60^{\circ}C$. One sample is found to melt at $114^{\circ}C$ and the other one melts at $119^{\circ}C$. How do you account for this?



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6. Bone ash contains both micro- and macronutrients in it. However, it is not used as a fertilizer. It is converted to superphosphate of lime which is an important fertilizer. Justify.



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7. An iron rod is dipped in conc. HNO_3 . Then it is made to react with copper sulphate solution. What observations are made in this process? Give reasons in support of your answer.



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8. Noble metals, like, gold and platinum are insoluble both in HCl and in HNO_3 . But they are soluble in aquaregia. Justify.



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9. Farmers are advised to grow beans or pea plants in crop rotation. Give reasons in support of your answer.



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10. When copper metal is subjected to treatment with nitric acid, different oxides of nitrogen are liberated with different concentrations of nitric acid. Explain the reason.



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11. Ammonium chloride on reaction with quick lime gives a gas X which turns red litmus blue.

Excess of X and greenish yellow gas are taken in container A and excess of greenish yellow gas and X are taken in container B which on reaction gives different sets of products. When moist litmus paper is introduced into the jars, it turned to red in jar B. Identify the reactions involved and give equations.



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12. Hydrogen chloride gas can be subjected to drying only with conc. H_2SO_4 but not with

quick lime or phosphorus pentoxide. Explain.



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13. Why are soaps ineffective during usage with hard water which contains soluble salts of calcium and magnesium?



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14. When a binary salt of iron reacts with hydrochloric acid, it gives out a gas which can

be used for identification of many metal ions. Identify the salt, the gas and explain how it is useful in detecting metal ions.



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15. Nitric acid is colourless when freshly prepared. But, on long standing, it turns to yellow. How do you account for this?



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16. Two research scholars Rony and Jony, needed red phosphorus and white phosphorus, respectively, for a research programme. Both of them went to a chemical store to purchase red phosphorus and white phosphorus. The storekeeper gave a normal glass bottle containing red phosphorus and a glass bottle containing white phosphorus which was kept in water. Justify the above observations.



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17. A solid non-metal A on exposure to air forms a compound B which on dissolution in water forms the highest oxyacid C. Identify different type of salts which can be formed when C reacts with caustic potash.



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18. Though P_2O_5 is a very good desiccant, its utility for drying is limited. Give reasons



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19. In an industry, H_2S gas is mixed with chlorine gas before releasing it into the atmosphere. Give the appropriate reason.



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20. A solid non-metal X on burning gives a compound Y which under high temperature and pressure conditions in presence of catalyst gets oxidized to Z. Z can give the .ic. acid of the non-metal on dissolution in water.

However, it is not a preferred reaction for the preparation of the acid. Give reason and explain the method employed for the preparation of the acid from Z and mention the precautions required during dilution of the acid.



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21. Concentrated HNO_3 and concentrated H_2SO_4 can't be used for the preparation of H_2S . Give a reason.



22. Rekha and Lekha took two fresh red roses and kept them in two containers A and B into which anhydride of sulphurous acid and a greenish yellow coloured gas are passed, respectively. After a few minutes these two roses lose their colour but on being exposed to the atmosphere, it was observed that Rekha's rose regained its colour but Lekha's rose did not. How do you account for the above changes?



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23. During the summer vacation, a chemistry laboratory assistant stored the chemicals in their respective bottles. After a few months it was observed that the lids of the bottles in which sodium hydroxide was stored was stuck tight. He went to a lecturer for finding the solution for this problem. What solution could be suggested by the lecturer?



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24. Ranchu's father is working in a fertilizer industry. One day at home he heard his father making a suggestion to his colleague that between nitrate salts and ammonium salts, nitrate salts are preferable for use as a fertilizer. The next day Ranchu asked his brother the reason for their father's suggestion. What answer did his brother give?



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25. Thermoplastics can be moulded again and again, whereas thermosettings cannot be moulded. Give a reason.



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Concept Application Level 3

1. Two non-metallic gaseous elements react in 1 : 3 ratio to give another gas X. A mixture of X and oxygen is taken in a jar and a burning

match stick is introduced into it. Another sample of the same mixture containing large excess of O_2 is passed over heated platinum. The mixture of gaseous products is dissolved in water to give Y and Z which are colourless. Z on long standing turns to yellow. Identify X, Y and Z by giving reasons wherever necessary. Also identify the exothermic reaction in the above sequence.



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2. Both slow cooling and rapid cooling of glass are avoided. How do you account for this?



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3. Phosphorite rock when treated with phosphoric acid gives a fertilizer which is preferred to a fertilizer obtained from the same mineral on treatment with conc. sulphuric acid. Justify



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4. Why is the compound AgCl used in photogrey lenses?



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5. Bleaching powder in cold water is an excellent bleaching agent. But it cannot act as a good bleaching agent when dissolved in hot water. Why?



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6. Hydrofluoric acid cannot be stored in glass bottles like all other acids. Give reason.



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7. Certain phosphates are helpful in making hard water soft. Which phosphates are used and how do they help in making water soft?



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8. Both H_2SO_4 and HNO_3 cause damage to skin when the skin comes in contact with them. Compare and contrast the reasons



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9. Nitric acid attacks all the metals except noble metals but the nature of products of same metal along with corresponding nitrates depends upon the concentration of HNO_3 . Explain.





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