CHEMISTRY

BOOKS - CBSE COMPLEMENTARY MATERIAL CHEMISTRY (HINGLISH)

P-BLOCK ELEMENTS

MCQ

1. On addition of conc. H_2SO_4 to a chloride salt, colourless fumes are evolved but in case of iodide salt, violet fumes come out. This is because

A. H_2SO_4 reduces Hl to l_2

B. Hl is of violet colour

C. Hl gets oxidised to l_2

D. Hl changes to HlO_3

Answer: C

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2. Affinity for hydrogen decreases in the group from fluorine to iodine. Which of the halogen acids should have highest bond dissociation enthalpy ?

A. HF

B. HCl

C. HBr

D. Hl

Answer: A

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3. Which of the following are peroxoacids of sulphur ?

A. H_2SO_5 and $H_2S_2O_8$

B. H_2SO_5 and $H_2S_2O_7$

C. $H_2S_2O_7$ and $H_2S_2O_8$

D. $H_2S_2O_6$ and $H_2S_2O_7$

Answer: A

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4. In the preparation of compounds of Xe, Bartlett had taken $O_2^+ PtF_6^-$ as a base compound. This is because

A. both O_2 and Xe have same size

B. both O_2 and Xe have same electron gain enthalpy

C. both O_2 and Xe have almost same ionisation enthalpy

D. both Xe and O_2 are gases.

Answer: C

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5. Reduction potentials of same ions are given below. Arrange them in decreasing order of oxidising power.

Ion	ClO_4^-	IO_4^-	BrO_4^-
Reduction potential E°/V	$E^- = 1.19V$	$E^- = 1.65V$	$E^- = 1.74V$

A. $ClO_4^- > IO_4^- > BrO_4^-$

B. $IO_4^- > BrO_4^- > ClO_4^-$

C. $BrO_4^- > IO_4^- > ClO_4^-$

D. $BrO_4^- > ClO_4^- > IO_4^-$

Answer: C

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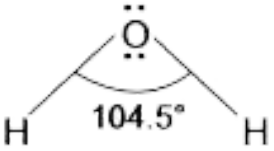
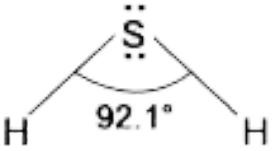
6. Bond angle in $H_2O(104.5^\circ)$ is higher than the bond angle of $H_2S(921.1^\circ)$. The difference is due to





A. O is diatomic and S is titra-atomic

B. difference in electronegatively of S and O

C. difference in oxidation states of S and O

D. difference in shapes of hybrid orbitals of S and O

Answer: B

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7. Arrange the following hydrides of group 16 elements in order of increasing stability.

A. $H_2S < H_2O < H_2Te > H_2Se$

B. $H_2O < H_2Te < H_2S_e < H_2S$

C. $H_2O < H_2S < H_2Se < H_2Te$

D. $H_2Te < H_2Se < H_2S < H_2O$

Answer: D

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8. The hybridisation of sulphur in sulphur tetrafluroide is

A. sp^3d

B. sp^3d^2

C. sp^3d^3

D. sp^3

Answer: A

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9. On heating $KClO_3$ we get :

A. $KClO_2 + O_2$

B. $KCl + O_2$

C. $KCl + O_3$

D. $KCl + O_2 + O_3$

Answer: B

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10. The correct order of acidic strength is

A. $K_2O > CaO > MgO$

B. $CO_2 > N_2O_5 > SO_3$

C. $Na_2O > Mgo > Al_2O_3$

D. $Cl_2O_7SO_2 > P_4O_{10}$

Answer: D

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11. Which one is not a property of ozone?

A. it acts an oxidising agent in dry state

B. oxidation of K1 into KlO_2

C. PbS is oxidised to $PbSO_4$

D. Hg is oxidised to Hg_2O

Answer: B

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12. The oxyacid of sulphur that contains a lone pair of electrons in sulphur is

A. sulphurous acid

B. sulphuric acid

C. peroxodisulphuric acid

D. pyrosulphuric acid

Answer: A

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13. The oxidation states of sulphur in the anions SO_3^{2-}, $S_2O_4^{2-}$, and $S_2O_6^{2-}$ follow the order

A. $S_2O_6^{2-} < S_2O_4^{2-} < SO_3^{2-}$

B. $S_2O_4^{2-} < SO_3^{2-} < S_2O_6^{2-}$

C. $SO_3^{2-} < S_2O_4^{2-} < S_2O_6^{2-}$

D. $S_2O_4^{2-} < S_2O_6^{2-} < SO_3^{2-}$

Answer: B

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14. The correct order of increasing electron affinity of halogens is

A. $1 < Br < Cl$

B. $Br < 1 < u$

C. $Cl < Br < 1$

D. $1 < Cl < Br$

Answer: A

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15. Which of the following gives correct arrangement of compounds involved based on their bond strength?

A. $HF > HCl > HBr > Hl$

B. $Hl > HBr > HCl > HF$

C. $Hl > HBr > HCl > HF$

D. $HF > HBr > HCl > H1$

Answer: A

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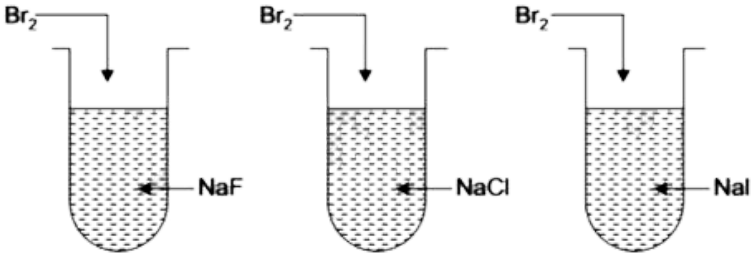
16. What is the correct operation when Br2 is treated with NaF, NaCl and Nal taken in three test tukes lavelled (X), (Y) and (Z)?



A. F_2 is liberated in (X) and Cl_2 in (Y)

B. Only l_2 is liberated in (Z).

C. Only Cl_2 is liberated in (Y)

D. Only F_2 is liberated in (X)

Answer: B

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17. Which of the following increasing order is not correct as mentioned in the property with it?

A. $HClO < HClO_2 < HClO_3 < HClO_4$ (thermal stalrlity)

B. $HClO_4 < HClO_3 < HClO_2 < HClO$ (oxidising power)

C. $F^- < Cl^- < Br^- < 1^-$ (reducing nature)

D. $HlO_4 < lCl < l_2 < Hl$ (oxidation number of iodine)

Answer: D

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18. Complete the following reactions by filling the appropriate choice.

$A.\ 6\mathrm{XeF_4} + 12\mathrm{H_2O} \rightarrow 4\mathrm{Xe} + 2\mathrm{XeO_3} + (i) + (ii)$

$B.\ \mathrm{XeF_6} + 3\mathrm{H_2O} \rightarrow (iii) + 6\mathrm{HF}$

A.

(i)	(ii)	(iii)
F_2	H_2O	$XeOF_4$

B.

(i)	(ii)	(iii)
$24HF$	$3O_2$	XeO_3

C. $\begin{matrix}(i) & (ii) & (iii) \\ 2HF & 2H_2O & XeO\end{matrix}$

D. $\begin{matrix}(i) & (ii) & (iii) \\ HF & H_2O & Xe_2O_3\end{matrix}$

Answer: B

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19. Among the following molecules

$(i)XeO_3(ii)XeOF_4(iii)XeF_6$

those having same number of lone pairs on Xe are

A. (i) and (ii) only

B. (i) and (iii) only

C. (ii) and (iii) only

D. (i), (ii) and (iii)

Answer: D

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20. sp^3d^2 hybridisation is present in

A. $XeOF_2$

B. $XeOF_4$

C. XeO_4

D. XeO_2F_2

Answer: B

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21. Which of the following statements are correct?

A. Among halogens, radius ratio between iodine and fluorine is maximum

B. Leaving $F-F$ bond, all halogens have weaker $X—X$ bond than $X—X'$ bond in interhalogens

C. Among interhalogen compounds maximum number of atoms are present in iodine fluoride.

D. Interhalogen compounds are more reactive than halogen compounds.

Answer: A::C::D

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22. Which of the following statements are correct for SO_2 gas ?

A. It act as bleaching agent in moist conditions

B. It's molecule has linear geometry

C. It's dilute solution is used as disinfectant.

D. It can be prepared by the reaction of dilute H_2SO_4 with metal sulphide.

Answer: A::C

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23. Which of the following statements are correct?

A. All the three $N—O$ bond lengths in HNO_3 are equal.

B. All $P-Cl$ bond lengths in PCl_5 molecule in gaseous state are equal.

C. P_4 molecule in white phosphorous have angular strain therefore white phosphours is very reactive.

D. PCl_5 is ionic in solid state in which cation is tetrahedral and anion is octahedral.

Answer: C::D

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24. Which of the following order are correct as per the properties mentioned against each ?

A. $As_2O_3 < SiO_2 < P_2O_3 < SO_2$ Acid strength

B. $AsH_3 < PH_3 < NH_3$ Enthalpy of vapourisation

C. $S < O < Cl < F$ More negative electron gain enthalpy

D. $H_2O > H_2S > H_2Se > H_2Te$ Thermal stability

Answer: A::D

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25. Which of the following statements are true?

A. Only type of interactions between particles of noble gases are due to weak dispersion forces.

B. Ionisation enthalpy of molecular oxygen is very close to that of numon.

C. Hydrolysis of XeF_6 is a redox reaction.

D. Xenon fluorides are not reactive.

Answer: A::B

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26. Match the items of column 1 and column 2 and mark the correct option

	Column 1		Column 2
(A)	H_2SO_4	(1)	Highest electron gain enthalpy
(B)	CCl_3NO_2	(2)	Chalcogen
(C)	Cl_2	(3)	Tear gas
(D)	Sulphur	(4)	Storage batteries

A. A–4, B–3, C–1, D–2

B. A–3, B–4, C–1, D–2

C. A–4, B–1, C–2, D–3

D. A–2, B–1, C–3, D–4

Answer: A

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27. Match the items of column 1 and column 2 and mark the correct option.

Column 1

(A) Its partial hydrolysis does not change oxidation state of central atom

(B) It is used in modern diving apparatus

(C) It is used to provide inert atmosphere for filling electrical bulbs

(D) Its central atom is in sp^3d^2 hybridisation

A. A–1, B–4, C–2, D–3

B. A–1, B–2, C–3, D–4

C. A–2, B–1, C–4, D–3

D. A–1, B–3, C–2, D–4

Answer: C

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28. Assertion : HI cannot be prepared by the reaction of KI with concentrated H_2SO_4

Reason : HI has lowest H-X bond strength among halogen acids.

A. Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.

B. Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is correct, but reason is wrong statement.

D. Assertion is wrong but reason is correct statement.

Answer: B

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29. Assertion: Both rhombic and monollinic sulphur exist as S_8 but oxygen exist as O_2.

Reason: Oxygen forms $P_\pi - P_\pi$ multiple bond due to small size and small bond length but $P_\pi - P_\pi$ bonding is not possible is sulphur.

A. Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.

B. Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.

C. Assertion is correct, but reason is wrong statement.

D. Assertion is wrong but reason is correct statement.

Answer: A

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30. The difference in the oxidisation numbers of the two types of sulphur atoms in $Na_2S_4O_6$ is

0	1	2	3	4	5	6	7	8	9

A.

B.

C.

D.

Answer:

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Very Short Answer Type Questions

1. Explain why SF_4 is easily hydrolysed, whereas SF_6 is resistant to hydrolysis ?

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2. In group 16, the stability of + 6 oxidation state decreases and that of + 4 oxidation state increases down the group. Why ?

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3. Draw the structure of $H_2S_2O_8$ and find the number of S – S bond, if any.

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4. What happens when sulphur dioxide gas is passed through an aqueous solution of Fe(III) salt ?

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5. All the bonds in SF_4 are not equivalent. Why ?

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6. Why does O_3 act as a powerful oxidising agent ?

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7. Which one of the following is not oxidized by O_3 ? State the reason :

$KI, FeSO_4, K_2MnO_4, KMnO_4$

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8. Why does oxygen not show an oxidation state of $+4$ and $+6$?

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9. Oxygen and sulphur in vapour phases are paramagnetic in nature. Explain why ?

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10. The stability of the halides of group 16 elements decreases in the order

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11. Why are the two S – O bonds in SO_2 molecule have equal strength ?

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12. Why is $K_{a_2} < < K_{a_1}$ for H_2SO_4 in water ?

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13. H_2O is a liquid while H_2S is a gas.

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14. The electron gain enthalpy with negative sign for oxygen $\left(-141 KJmol^{-1}\right)$ is numerically less than that for sulphur $\left(-200 KJmol^{-1}\right)$. Give reason.

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15. Why is dioxygen a gas but sulphur a solid?

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16. In the preparation of H_2SO_4 by Contact process, why is SO_3 not absorbed directly in water to form H_2SO_4 ?

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17. Explain why fluorine forms only one oxoacid, HOF.

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18. Why HF is the weakest acid and HI is the strongest ?

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19. Explain why halogens are strong oxidizing agents.

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20. I_2 is more soluble in KI than in water. Why ?

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21. What is cause of bleaching action of chlorine water ? Explain it with chemical equation.

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22. Electron gain enthalpy of fluorine is less than that of chlorine - explain.

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23. Why can't we prepare HBr by heating KBr with sulphuric acid ?

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24. Explain why : ICl is more reactive than I_2 ?

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25. Which oxide of iodine is used for the estimation of carbon mono oxide ?

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26. Arrange the following oxoacids of chlorine in increasing order of acid strength :

$HOCl, HOClO, HOClO_2, HOClO_3$

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27. Why does fluorine not play the role of a central atom in interhalogen compounds ?

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28. Fluorine exhibit only – 1 oxidation state whereas other halogens exhibit +ve oxidation states also. Explain why ?

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29. ClF_3 exists but FCl_3 does not. Why ?

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30. Despite lower value of its electron gain enthalpy with negative sign, fluorine (F_2) is a stronger oxidising agent than chlorine (Cl_2). Explain.

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31. ClF_3 molecule has a bent T-shaped structure and not a trigonal planar structure. Explain.

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32. What happens when NaCl is heated with H_2SO_4 in the presence of MnO_2 ?

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33. With what neutral molecule ClO^- is isoelectronic ?

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34. Why HF acid is stored in wax coated glass bottle ?

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35. Bond dissociation enthalpy of F_2 is less than that of Cl_2. Explain why ?

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36. What inspired N. Bartlett for carrying out reaction between Xe and PtF_6?

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37. Predict the shape and the bond angle (90° or more or less) in the following case :

XeF_2 and the angle $F - \underset{\cdot\cdot}{\overset{\cdot\cdot\cdot\cdot}{Xe}} - F$

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38. Structure of Xenon fluoride cannot be explained by valence bond approach. Why ?

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39. Why do some noble gases form compounds with fluorine and oxygen only ?

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40. XeF_2 has a straight linear structure and not a bent angular structure. Why ?

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41. Why do noble gases have low boiling points ?

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42. Write the chemical equation involved in the preparation of XeF_4.

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Short Answer I Type Questions

1. Write the chemical equations of the following reactions :

Sucrose is heated with conc. H_2SO_4.

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2. Write the chemical equations of the following reactions :

Sodium nitrate is heated with conc. H_2SO_4.

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3. Mention the favourable conditions for the manufacture of sulphuric acid by contact process.

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4. Complete the following reactions :

$PbS + O_3 \rightarrow$

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5. Complete the following reactions :

$KI + H_2O + O_3 \rightarrow$

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6. Complete the following chemical equations :

(i) $SO_2 + MnO_4^- + H_2O \rightarrow$

(ii) $F_2(g) + H_2O(l) \rightarrow$

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7. Complete the following reactions :

$S_8 + H_2SO_4(\text{conc.}) \rightarrow$

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8. H_2S is a stronger acid than H_2O. Explain

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9. Account for the following :

Two S - O bond lengths in SO_2 are equal.

(ii) Fluorine shows only - 1 oxidation state in its compounds.

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10. Explain why :

SF_6 is inert and stable but SF_4 is reactive.

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11. Why does sulphur have greater tendency for catenation than oxygen ?

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12. How is O_3 estimated quantitatively ?

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13. Explain why ozone is thermodynamically less stable then oxgen ?

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14. Draw the structure of :

H_2SO_5

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15. Draw the structure of :

SO_3^{2-}

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16. Interhalogen compounds are more reactive than halogens except F_2. Why ?

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17. Give one important use of ClF_3.

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18. Write the composition of bleaching powder.

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19. What happens when NaCl is heated with conc. H_2SO_4 in the presence of MnO_2. Write the chemical equation.

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20. A colourless pungent smelling gas, which easily liquefies to a colourless liquid and freezes to a white crystalline solid, gives dense white fumes with ammonia. Identify the gas and write the chemical equation for its laboratory preparation.

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21. NO_2 readily dimenise, whereas ClO_2 does not. Why ?

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22. Compare the oxidizing powers of F_2 and Cl_2 on the basis of bond dissociation enthalpy, electron gain enthalpy of halogens and hydration enthalpy of halide ions.

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23. Which fluorinating agent are oftenly used instead of F_2 ? Write chemical equation showing their use as flurorinating agents.

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24. Draw the structure of BrF_3.

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25. Complete the following reactions :

$Al_2O_3(s) + NaOH(aq) + H_2O(l) \rightarrow$

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26. Complete the following reactions :

$HCl + O_2 \rightarrow$

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27. Complete the following reactions :

$Ca(OH)_2 + Cl_2 \rightarrow$

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28. Complete the following reactions :

$N_2(\text{excess}) + Cl_2 \rightarrow$

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29. Complete the following reactions :

$Na_2SO_3 + Cl_2 + H_2O \rightarrow$

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30. Complete the following reactions :

$NH_3 + Cl_2(\text{excess}) \rightarrow$

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31. Complete the following reactions :

$Cl_2 + NaOH(\text{cold \& dil.}) \rightarrow$

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32. Complete the following equations :

(i) $NaOH(aq)$ $+ Cl_2(g) \rightarrow$
(hot and conc.)

(ii) $XeF_6(s) + H_2O(l) \rightarrow$

(iii) $P_4(s) + SO_2Cl_2(l) \rightarrow$

(iv) $XeF_4(g) + H_2O(l) \rightarrow$

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33. Complete the following reactions :

$Fe + HCl \rightarrow$

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34. $Cl_2 + F_2(\text{excess}) \rightarrow$

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35. Complete the following reactions :

$U + ClF_3 \rightarrow$

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36. Complete the following reactions :

$FeSO_4 + H_2SO_4 + Cl_2 \rightarrow$

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37. Draw the structure of :

I_3^-

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38. Draw the structure of :

ICl_2^- .

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39. Give appropriate reason for each of the following :

Metal fluorides are more ionic than metal chlorides.

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40. Suggest reason why only known binary compounds of noble gases are fluorides and oxides of Xenon and to a lesse extent of Kryton.

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41. Hydrolysis of XeF_6 is not regarded as a redox reaction. Why ?

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42. Write a chemical equation to represent the oxidizing nature of XeF_4.

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43. Write chemical equations when :

XeF_2 is hydrolysed.

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44. Write chemical equations when :

PtF_6 and Xenon are mixed together.

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45. Complete the equation

$XeF_6 + H_2O \rightarrow \ ? \ + \ ?$

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46. $XeF_6 + H_2O \rightarrow$

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47. Draw the structure of BrF_3, $XeOF_4$, XeO_3 using VSEPR theory.

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48. XeF_2 has linear structure and not a bent structure , Given reason .

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49. The majority of noble gas compounds are those of xenon. Explain.

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50. Write the chemical reactions :

$XeF_2(s) + H_2O(l) \rightarrow$

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51. $XeF_4 + O_2F_2 \rightarrow$

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Short Answer Ii Type Questions

1. How does O_3 react with lead sulphide ? Write chemical equation.

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2. What happens when SO_2 is passed in acidified $KMnO_4$ solution ?

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3. SO_2 behaves with lime water similar to CO_2. Explain why ?

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4. $CaF_2 + H_2SO_4 \rightarrow$

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5. Complete the reactions :

$C_{12}H_{22}O_{11} + H_2SO_4(\text{conc.}) \rightarrow$

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6. Complete the reactions :

$SO_2 + MnO_4^- + H_2O \rightarrow$

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7. An amorphous solid 'A' burns in air to form a gas 'B' which turns lime water milky. The gas is also produced as a by-product during roasting of sulphide ore. This gas decolourises acidified aq. $KMnO_4$ solution. Identify the solid 'A' and the gas 'B' and write the reaction involved.

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8. How is SO_2 prepared in laboratory ?

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9. An amorphous solid 'A' burns in air to form a gas 'B' which turns lime water milky. The gas is also produced as a by-product during roasting of

sulphide ore. This gas decolourises acidified aq. $KMnO_4$ solution. Identify the solid 'A' and the gas 'B' and write the reaction involved.

What happens when SO_2 is passed through water and reacts with NaOH ? Write balanced equation.

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10. An amorphous solid 'A' burns in air to form a gas 'B' which turns lime water milky. The gas is also produced as a by-product during roasting of sulphide ore. This gas decolourises acidified aq. $KMnO_4$ solution. Identify the solid 'A' and the gas 'B' and write the reaction involved.

Write its any two uses.

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11. Assign reason for the following :

(i) Sulphur in vapour state exhibits paramagnetism.

(ii) H_2O is less acidic than H_2Te.

(iii) In spite of having same electronegativity, oxygen forms hydrogen bond while chlorine does not.

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12. Write contact process for the manufacture of king of chemicals.

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13. Give appropriate reason for each of the following :

Perchloric acid is stronger than sulphuric acid.

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14. Give appropriate reason for each of the following :

Addition of chlorine to KI solution gives it a brown colour but excess of Cl_2 makes it colourless.

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15. X_2 is a greenish yellow gas with pungent offensive smell used in purification of water. It partially dissolves in H_2O to give a solution which turns blue litmus red. When X_2 is passed through NaBr solution, Br_2 is obtained.

Identify X_2, name the group to which it belongs.

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16. X_2 is a greenish yellow gas with pungent offensive smell used in purification of water. It partially dissolves in H_2O to give a solution which turns blue litmus red. When X_2 is passed through NaBr solution, Br_2 is obtained.

What are the products obtained when X_2 reacts with H_2O ? Write chemical equation.

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17. X_2 is a greenish yellow gas with pungent offensive smell used in purification of water. It partially dissolves in H_2O to give a solution which turns blue litmus red. When X_2 is passed through NaBr solution, Br_2 is obtained.

What happens when X_2 reacts with hot and conc. NaOH ? Give equation.

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18. Arrange the following in the order of the property indicated for each set :

F_2, Cl_2, Br_2, I_2 (Increasing bond dissocation energy)

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19. Arrange the following in the order of the property indicated for each set :

HF, HCl, HBr, HI (decreasing acid strength)

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20. Draw the structure of :

Hypochlorous acid

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21. Draw the structure of :

Chlorous acid

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22. Draw the structure of :

Perchloric acid

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23. Which is more acidic among $HClO_4$ and HIO_4 ? Why ?

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24. Assign reason to the following :

Noble gases have large positive values of electron gain enthalpy.

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25. Assign reason to the following :

Helium is used by scuba divers.

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26. Assign reason to the following :

No chemical compound of helium is known.

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27. Explain the structures of

$XeOF_4$

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28. What is the structure ox XeF_6?

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29. Explain the structure of

XeO_3

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30. Complete the reactions :

$XeF_2 + NaF \rightarrow$

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31. $XeF_4 + SbF_5 \rightarrow$

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32. $XeF_4 + H_2O \rightarrow$

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33. How is XeO_3 prepared from XeF_6 ? Write the chemical equation for the reaction.

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34. Draw the structues of the following :

(i) XeF_4

(ii) $HClO_4$

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Long Answer Type Questions

1. How is XeF_6 prepared from the XeF_4 ? Write the chemical equation for the reaction.

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2. Deduce the structure of XeF_6 using VSEPR theory.

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3. How does XeF_2 reacts with PF_5 ?

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4. Give one use each of helium and neon.

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5. Write the chemical equation for the hydrolysis of XeF_4.

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6. A greenish yellow gas 'X' is passed through water to form a saturated solution. The aqueous solution on treatment with silver nitrate solution gives a white precipitate. The saturated aqueous solution also dissolves magnesium ribbon with the evolution of a colourless gas 'Y'. Identify gases 'X' and 'Y'.

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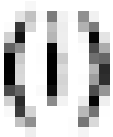
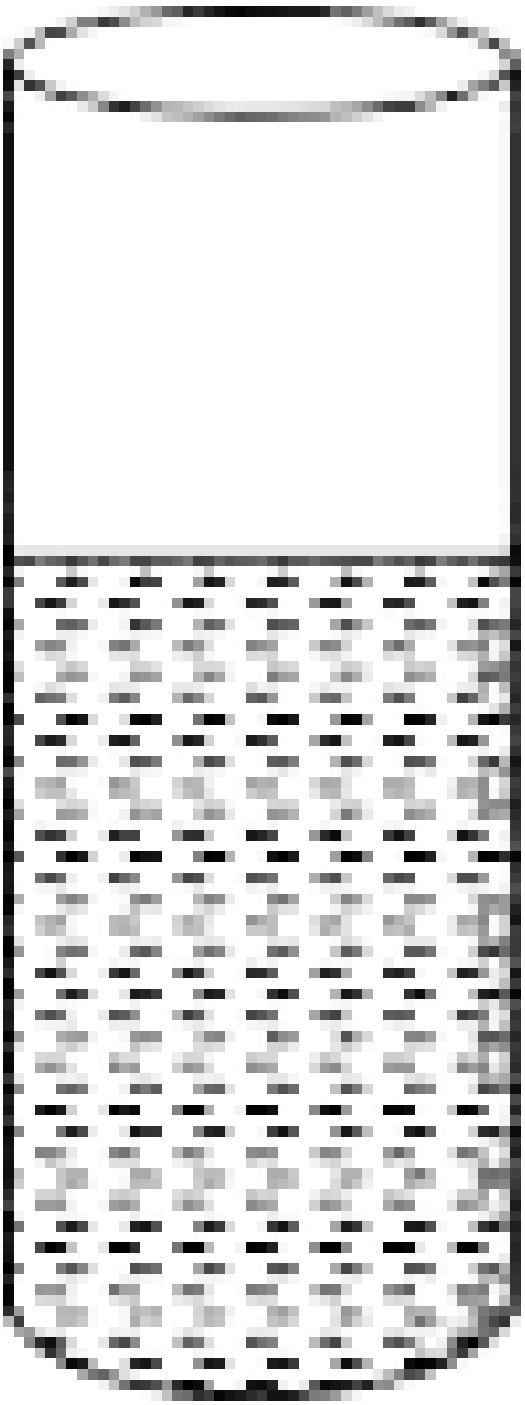
7. Concentrated sulphuric acid is added followed by heating in each of the following test types labelled (i) to (v)





Cena

Cane sugar

Identify in which of the above test tubes, the following changes will be observed. Support your answer with the help of a chemical equation.

formation of black substance

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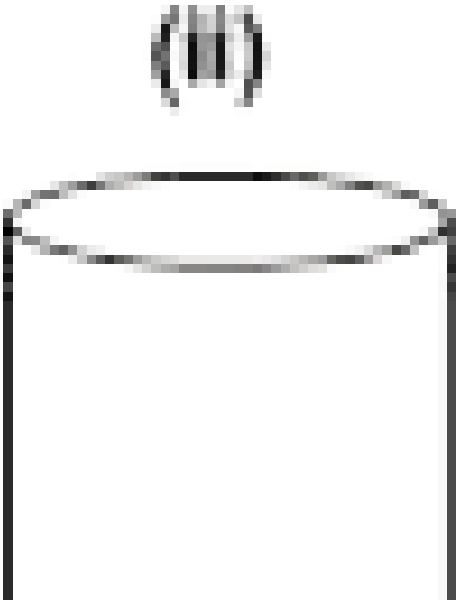
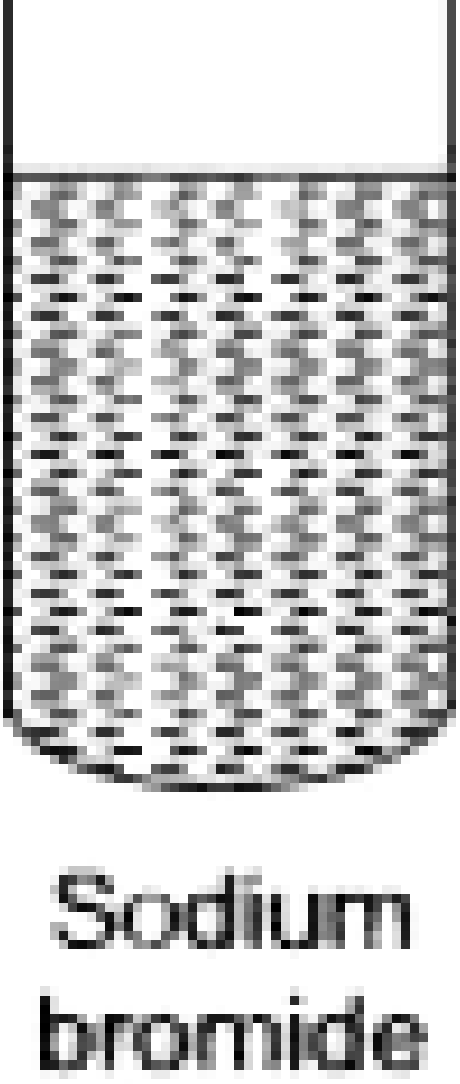
8. Concentrated sulphuric acid is added followed by heating in each of the following test types labelled (i) to (v)





Identify in which of the above test tubes, the following changes will be observed. Support your answer with the help of a chemical equation.

evolution of brown gas

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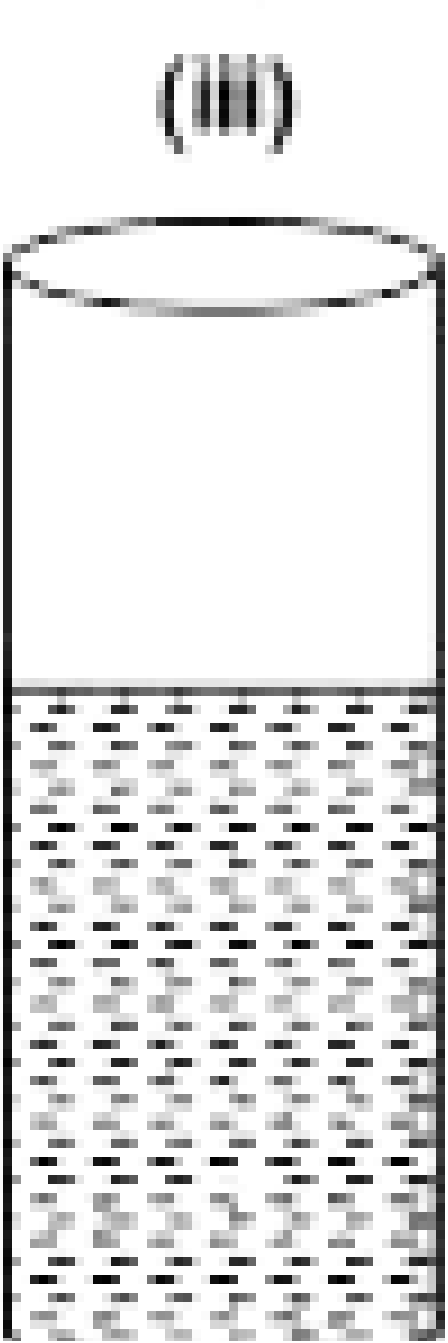
9. Concentrated sulphuric acid is added followed by heating in each of the following test types labelled (i) to (v)



Identify in which of the above test tubes, the following changes will be observed. Support your answer with the help of a chemical equation.

evolution of colourless gas

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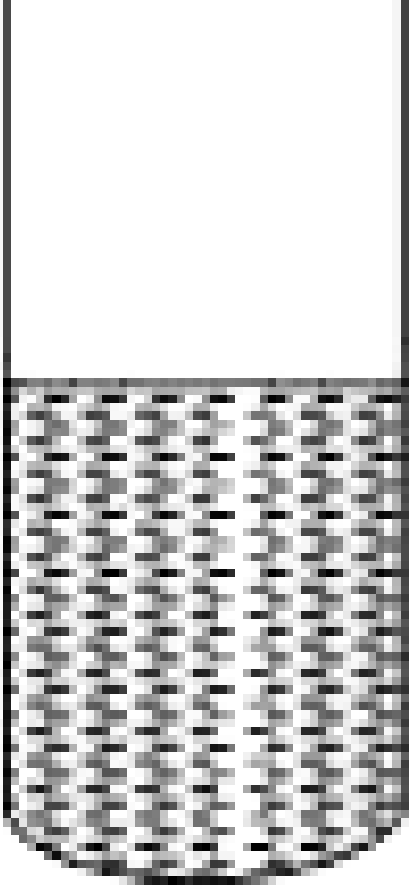
10. Concentrated sulphuric acid is added followed by heating in each of the following test types labelled (i) to (v)



Identify in which of the above test tubes, the following changes will be observed. Support your answer with the help of a chemical equation.

formation of brown substance which on dilution becomes blue.

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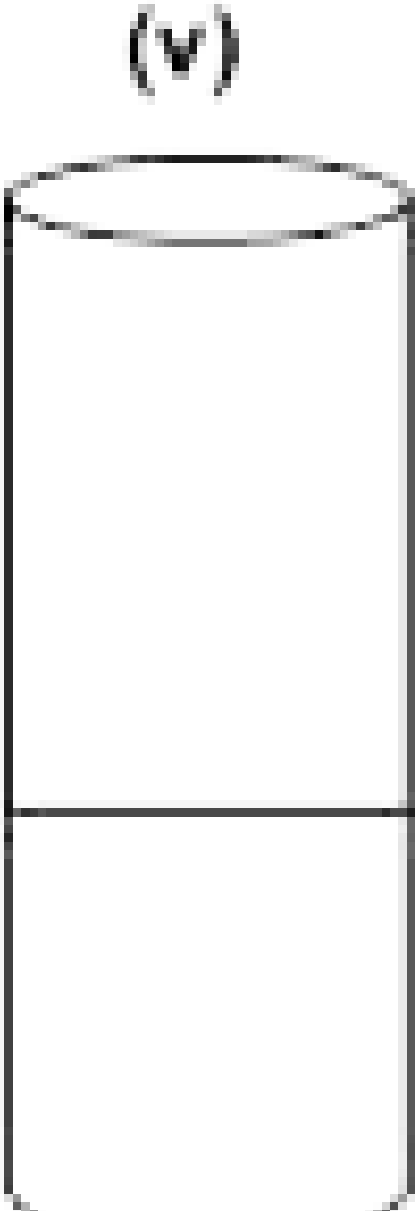
11. Concentrated sulphuric acid is added followed by heating in each of the following test types labelled (i) to (v)



Identify in which of the above test tubes, the following changes will be observed. Support your answer with the help of a chemical equation.

disappearance of yellow powder along with the evolution of a colourless gas.

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12. An aqueous solution of gas 'A' gave the following data (reactions):

It decolourised an acidified $KMnO_4$ solution.

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13. An aqueous solution of gas 'A' gave the following data (reactions):

On boiling with H_2O_2 followed by cooling and then adding an aqueous solution of $BaCl_2$, a white precipitate insoluble in dilute HCl was obtained.

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14. An aqueous solution of gas 'A' gave the following data (reactions):

On passing H_2S through the solution of the gas, white turbidity was obtained. Identify the gas and give equations for gas step

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15. An element 'A' exist as a yellow solid in standard stae. It forms a voilet hydride 'B' which is a foul smelling gas and is extensively used in qualitative analysis of salts. When reated with oxygen. 'B' forms an oxide 'C' which is a colourless and pungent smelling gas. The gas when passed through acidified $kMnO_4$ solution, decolourises it, 'C' gets oxidised to

another oxide ‘D’ in the presence of heterogenous catalyst. Identifier A, B, C, D and also give the chemical equation of reaction ‘C’ with acidified $KmnO_4$ solution and for conversion of ‘C’ into ‘D’.

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