**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 506**

**Time :** 16:24:00 **CHEMISTRY**

**Marks :** 954

7.THE P-BLOCK ELEMENTS

**Single Correct Answer Type**

| 1. | Which of the following arrangements does not truly represent the property indicated against it? | | | | | | | |
|  | a) | : Oxidising power | | | b) | : Electronegativity | | |
|  | c) | : Electron affinity | | | d) | : Bond energy | | |
| 2. | Consider the following reactions in which atoms have been labelled with isotopes (indicated by \*)  (I)  (II)  In which case isotopes are equivalent in the products? | | | | | | | |
|  | a) | I | b) | II | c) | Both I and II | d) | None of these |
| 3. | What does Green Chemistry in terms of environment mean? | | | | | | | |
|  | a) | Green house effect | | | | | | | |
|  | b) | Reactions related to depletion of ozone layer | | | | | | | |
|  | c) | Photosynthetic reactions in plants | | | | | | | |
|  | d) | Reduction in the use and production of hazardous chemicals | | | | | | | |
| 4. | The number of bonds in sulphur trioxide trimer, is | | | | | | | |
|  | a) | Three | b) | Two | c) | One | d) | Zero |
| 5. | Extra pure N2 can be obtained byheating | | | | | | | |
|  | a) | NH3 with CuO | b) | NH4 NO3 | c) | (NH4)2 Cr2O7 | d) |  |
| 6. | Which of the following is not a chalcogen? | | | | | | | |
|  | a) | Se | b) | O | c) | S | d) | Na |
| 7. | Select the correct statements | | | | | | | |
|  | a) | Helium has the lowest melting point and boiling point | | | | | | | |
|  | b) | Helium can diffuse through rubber, PVC and even glass | | | | | | | |
|  | c) | and form clathrate | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 8. | Select the correct statement(s) | | | | | | | |
|  | a) | and are used as bleaching agents and as germicides | | | | | | | |
|  | b) | is used in the quantitative estimation of CO | | | | | | | |
|  | c) | Bond angle varies in the order | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 9. | Chlorine dioxide | | | | | | | |
|  | a) | Is paramagnetic in nature | | | b) | Has odd-electron bond | | |
|  | c) | Is stable | | | d) | Has all the above properties true | | |
| 10. | Of the following acids  I. Hypophosphorous acid  II. Oxalic acid  III. Glycine | | | | | | | |
|  | a) | I, II are monobasic, III dibasic and amphoteric | | | | | | | |
|  | b) | II monobasic, I dibasic acid, III amphoteric | | | | | | | |
|  | c) | I monobasic, II dibasic, III amphoteric | | | | | | | |
|  | d) | I, II dibasic, III amphoteric | | | | | | | |
| 11. | In case of oxygen family (Group 16) | | | | | | | |
|  | a) | The tendency for catenation decreases markedly as we go down the group | | | | | | | |
|  | b) | Maximum coordination of oxygen is four due to lack of -orbital but that of other elements is six due to presence of -orbital | | | | | | | |
|  | c) | The tendency to form multiple bonds with C, N and O decreases as going down the group from S to Te | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 12. | Dissociation of into and is | | | | | | | |
|  | a) | Kinetically controlled | | | | | | | |
|  | b) | Thermodynamically controlled | | | | | | | |
|  | c) | Kinetically as well as thermodynamically controlled | | | | | | | |
|  | d) | Neither kinetically nor thermodynamically controlled | | | | | | | |
| 13. | Which is most basic fluoride? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) | None is basic, all are acids | | |
| 14. | Which one of the following is not a true “per acid”? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 15. | Maximum coordination number of oxygen in liquid water is | | | | | | | |
|  | a) | Two | b) | Three | c) | Four | d) | Five |
| 16. | is the anhydride of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | and |
| 17. | Which of the following atoms has the highest ionization energy? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 18. | reacts with in alkaline medium to produce | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 19. | and are all very strong acids in aqueous solution. In glacial acetic acid medium, their acid strength is such that | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 20. | Thermal stability of hydrates of group 18 elements | | | | | | | |
|  | a) | Increases down the group | | | b) | Decreases down the group | | |
|  | c) | Remains unchanged | | | d) | First increases up to and then decreases | | |
| 21. | “Chlorine-type” laundry bleaches are in reality aqueous solution of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 22. | Basic character of fluorides increases in the order | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 23. | bond is present in | | | | | | | |
|  | a) | - | b) | - | c) |  | d) |  |
| 24. | An experiment involving absorption of oxygen and its quantitative estimation would involve use of | | | | | | | |
|  | a) | Caustic soda | b) | Pyrogallol | c) | Conc sulphuric acid | d) | Turpentine oil |
| 25. | Which is/are true statement(s)? | | | | | | | |
|  | a) | Basic nature of is in order | | | | | | | |
|  | b) | HI is strongest acid of and | | | | | | | |
|  | c) | The ionic character of bond decreases in the order | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 26. | Ozone layer is being depleted. This is due to | | | | | | | |
|  | a) | No emission from supersonic jets | | | b) | Chlorofluorocarbon used as aerosols | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 27. | The thermal stability of hydrides of oxygen family is in order | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 28. | Consider the following compounds  II. III.  Among these compounds identify those that have different oxidation states for same type of atoms | | | | | | | |
|  | a) | I and III | b) | I and III | c) | I and II | d) | I, II and III |
| 29. | The term ‘thio’ is used in the names of all of the following compounds except | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 30. | Most abundant noble gas in air is | | | | | | | |
|  | a) | He | b) | Ne | c) |  | d) |  |
| 31. | A rare gas that was detected in the sun before its discovery on earth is | | | | | | | |
|  | a) | He | b) | Ne | c) |  | d) | Kr |
| 32. | Aqueous hypo solution on reaction with aqueous gives | | | | | | | |
|  | a) | Yellow ppt changing to black | | | b) | White ppt changing to black | | |
|  | c) | Orange ppt changing to blue | | | d) | No ppt | | |
| 33. | Which of the following gas mixture is used by the divers inside the sea? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 34. | Which of the following is not oxidised by O3? | | | | | | | |
|  | a) | KI | b) | FeSO4 | c) | KMnO4 | d) | K2MnO4 |
| 35. | Sulphur dioxide levels in the atmosphere can be reduced by using | | | | | | | |
|  | a) | Catalytic converters in industry | | | b) | Static electricity to attract it in factory chimneys | | |
|  | c) | More efficient car-engines | | | d) | Low-sulphur fuels | | |
| 36. | behaves as a reducing agent when | | | | | | | |
|  | a) | Passed over hot | | | b) | Mixed with moist | | |
|  | c) | Passed through acidified solution | | | d) | Passed through solution | | |
| 37. | Gas is passed into aqueous solution of to form . Select the correct statements based on the above facts | | | | | | | |
|  | a) | Colour of changes from yellow to very light green | | | | | | | |
|  | b) | Gas turns lead acetate paper black | | | | | | | |
|  | c) | form deep blue colour with | | | | | | | |
|  | d) | All the above facts are true | | | | | | | |
| 38. | Dipole moment and ionization constant are maximum in case of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 39. | The compound of sulphur used as a solvent in rubber industry is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 40. | The high oxidizing power of fluorine is due to | | | | | | | |
|  | a) | High electron affinity | | | | | | | |
|  | b) | High heat of dissociation and low heat of hydration | | | | | | | |
|  | c) | Low heat of dissociation and high heat of hydration | | | | | | | |
|  | d) | High heat of dissociation and high heat of hydration | | | | | | | |
| 41. | Which is most thermodynamically stable allotropic form of phosphorus? | | | | | | | |
|  | a) | Red | b) | White | c) | Black | d) | Yellow |
| 42. | Which one of the following is square planar? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 43. | is used in photography for fixing the negative. It removes the by | | | | | | | |
|  | a) | Complex formation | | | b) | Oxidation of to | | |
|  | c) | Reduction of to | | | d) | Formation of double salt | | |
| 44. | Which of the following have highest melting points? | | | | | | | |
|  | a) | - block elements | b) | - block elements | c) | - block elements | d) | None of these |
| 45. | Match Column I with Column II and select the correct answer using the codes given below the column   |  |  |  |  | | --- | --- | --- | --- | | **Column I** | | **Column II** | | | A  B  C  D |  | 1  2  3  4 | Distorted octahedral  Tetrahedral  Square planar  Pyramidal |   Codes  A B C D | | | | | | | |
|  | a) | 1 2 3 4 | | | b) | 3 1 4 2 | | |
|  | c) | 1 3 2 4 | | | d) | 2 4 1 3 | | |
| 46. | Which is the strongest oxidizing agent out of the following? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 47. | can reduce | | | | | | | |
|  | a) | to | b) | to | c) | to | d) | All of those |
| 48. | Cold solution of barium nitrite on mixing with sulphuric acid produces | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 49. | is the mixed anhydride of | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 50. | Oxalic acid on heating with conc. produce | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 51. | Which of the following gas mixture is used by the divers inside the sea? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 52. | Ozone reacts with all the following reagents except one of the following | | | | | | | |
|  | a) |  | | | b) | Moist iodine | | |
|  | c) | Potassium ferrocyanide | | | d) | Mercury | | |
| 53. | on reaction with bleaching powder forms | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 54. | End-product of the hydrolysis of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 55. | Out of and peroxy acids are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | and |
| 56. | The active constituent of bleaching powder is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 57. | Liver of sulphur is a mixture of | | | | | | | |
|  | a) | Potassium pentasulphide () and potassium thiousulphate () | | | | | | | |
|  | b) | Potassium carbonate () and () above | | | | | | | |
|  | c) | Potassium disulphide () and () above | | | | | | | |
|  | d) | () and () above | | | | | | | |
| 58. | Oil of vitriol is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 59. | For advertisement the coloured discharged tubes contain | | | | | | | |
|  | a) | He | b) | Ne | c) |  | d) | Kr |
| 60. | gas is passed into aqueous solution of KBr and KI and added. It is observed that there is | | | | | | | |
|  | a) | Violet colour in layer | | | b) | Yellow colour in layer | | |
|  | c) | Yellow colour in aqueous layer | | | d) | Violet colour in layer | | |
| 61. | The bond angle in out of is minimum. It is because in case of | | | | | | | |
|  | a) | Electrons are nearer to fluorine due to high electronegativity of F compared to to Br | | | | | | | |
|  | b) | Lone pair-lone pair repulsion decreases bond angle | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 62. | Which is the incorrect statement? | | | | | | | |
|  | a) | All halogens form oxyacids | | | | | | | |
|  | b) | All halogens show oxidation states | | | | | | | |
|  | c) | Hydrofluoric acid forms and and attacks glass | | | | | | | |
|  | d) | Oxidising power is in order | | | | | | | |
| 63. | Estimation of ozone can be made quantitatively by | | | | | | | |
|  | a) | Decomposition into and absorption of into pyrogallol | | | | | | | |
|  | b) | Volumetric method using KI and titration of the liberated iodine using hypo solution | | | | | | | |
|  | c) | Oxidative ozonolysis method | | | | | | | |
|  | d) | All methods given above | | | | | | | |
| 64. | Consider the following compounds  I. Sulphur dioxide  II. Hydrogen peroxide III. Ozone  Among these compounds, those which can act as bleaching agents would include | | | | | | | |
|  | a) | I and III | b) | II and III | c) | I and II | d) | I, II and III |
| 65. | Least stable oxide of chlorine is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 66. | Acid strength of is dependent on | | | | | | | |
|  | a) | The electronegativity differences of H and | | | | | | | |
|  | b) | The tendency of the hydrated molecule to form | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 67. | All of the following have a tetrahedral shape except | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 68. | Which have distorted geometry based on VSEPR model? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 69. | Xenon fluorides acts as fluoride acceptor with | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 70. | When molten sulphur is suddenly cooled by pouring into water, it takes the form of | | | | | | | |
|  | a) | Milk of sulphur | b) | Colloidal sulphur | c) | Flower of sulphur | d) | Plastic sulphur |
| 71. | An important product in the ozone depletion by chlorofluorocarbons is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 72. | Hydrates of helium and neon have not been prepared because of | | | | | | | |
|  | a) | Low polarisability | b) | Small size | c) | Low boiling point | d) | All of these |
| 73. | A bottle completely filled with conc. is left unstoppered for several days and we observe spontaneous overflow of acid. It is due to | | | | | | | |
|  | a) | Change in temperature | | | b) | Hygroscopic nature of | | |
|  | c) | Absorption of air by | | | d) | Dehydration of | | |
| 74. | Which of the following bonds has the least energy? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 75. | Helium accumulates in the earth’s crust through | | | | | | | |
|  | a) | -decay of radioactive element | | | b) | Thermonuclear reactions | | |
|  | c) | -decay of radioactive element | | | d) | -decay of radioactive element | | |
| 76. | Which reaction is not feasible? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 77. | The tetrahedral arrangement of perchlorate ion is due to | | | | | | | |
|  | a) | Presence of a lone pair of electrons | | | b) | Trigonal bipyramidal shape of the ion | | |
|  | c) | hybridisation | | | d) | hybridisation | | |
| 78. | The inert gas abundantly found in atmosphere is | | | | | | | |
|  | a) | Kr | b) | He | c) |  | d) |  |
| 79. | The reaction of P4 with *X* leads selectively to P4O6 the *X* is | | | | | | | |
|  | a) | dry O2 | | | b) | A mixture of O2 and N2 | | |
|  | c) | Moist O2 | | | d) | O2in the presence of aqueous NaOH | | |
| 80. | A considerable part of the harmful UV rays of the sun does not reach the surface of the earth. This is because high above the earth’s atmosphere, there is a layer of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 81. | Oxidative ozonolysis of 2-butene in the presence of Zn or dimethyl sulphide forms | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 82. | The best reducing agent of the following is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 83. | have positive value of (free energy) indicating that | | | | | | | |
|  | a) | These oxides are stable | | | | | | | |
|  | b) | These oxides are unstable and changes to and | | | | | | | |
|  | c) | These disproportionate into and | | | | | | | |
|  | d) | These oxides can form interhalogen compounds | | | | | | | |
| 84. | Inert atmosphere for welding of metals is obtained by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 85. | Yellow oils of sulphur is/are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 86. | 10 g of bleaching powder on reaction with KI required 100 mL of 1 N hypo. Thus, % of pure bleaching powder is | | | | | | | |
|  | a) | 100% | b) | 80% | c) | 63.5% | d) | 35.5% |
| 87. | Oxidation of hydrogen halide, H affords a method for the industrial and laboratory preparation of the halogen, , in the free state in respect of all of the following except | | | | | | | |
|  | a) | Fluorine | b) | Chlorine | c) | Bromine | d) | Iodine |
| 88. | Which of the following gas is insoluble in water? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 89. | The process of obtaining sulphur by the borehole method is called | | | | | | | |
|  | a) | The Frasch process | | | b) | The Lablanc process | | |
|  | c) | The Calcaroni process | | | d) | The Mannheium process | | |
| 90. | Which of the following product is formed by the reaction of sulphur dioxide with chlorine in presence of sunlight? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 91. | Which one of the following compounds is not a protonic acid | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 92. | Shape of is similar to that of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 93. | Which of the following has—O—O—linkage? | | | | | | | |
|  | a) | H2S2O6 | b) | H2S2O8 | c) | H2S2O3 | d) | H2S4O6 |
| 94. | Select the incorrect statement | | | | | | | |
|  | a) | and are used as bleaching agents for paper pulp and textiles | | | | | | | |
|  | b) | (hypohalites) salts are used as detergent | | | | | | | |
|  | c) | disproportionates in alkaline medium | | | | | | | |
|  | d) | is oxidized to by in acidic medium | | | | | | | |
| 95. | is conducting in the presence of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 96. | Select the incorrect statement(s) | | | | | | | |
|  | a) | is diamagnetic in solid state | | | b) | is paramagnetic and exists in liquid state | | |
|  | c) | is anhydride of | | | d) | forms dimer due to unpaired electron | | |
| 97. | In very recent Sunami in Japan, food materials were banned as they were contaminated with radioactivity. Which of the following was found to have radioactive beyond prescribed limit? | | | | | | | |
|  | a) | F | b) |  | c) | I | d) | At |
| 98. | For H3PO3 and H3PO4 the correct choice is | | | | | | | |
|  | a) | H3PO3 is dibasic and reducing | | | b) | H3PO3 is dibasic and non-reducing | | |
|  | c) | H3PO3 is tribasic and reducing | | | d) | H3PO3 is tribasic and non reducing | | |
| 99. | Which does not have bond? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 100. | The absorption of UV radiation by | | | | | | | |
|  | a) | Protects the inhabitants of our planet from injurious radiation | | | | | | | |
|  | b) | Maintains an equilibrium between the concentrations of and | | | | | | | |
|  | c) | Makes both the function effective | | | | | | | |
|  | d) | Makes no function effective | | | | | | | |
| 101. | Acid strength of oxoacids of chlorine is in order | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 102. | Which one of the following is the weakest base as per the Bronsted concept? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 103. | precipitates aqueous solution in | | | | | | | |
|  | a) | Acidic medium | b) | Neutral medium | c) | Both (a) and (b) | d) | None of these |
| 104. | Among the following the number of compounds that can react with PCl5 to give POCl3 is O2 , CO2, SO2, H2O, H2 SO4, P4O10 | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 3 | d) | 4 |
| 105. | Consider the following boron halides  I. II  III. IV.  The Lewis acid characters of these halides are such that | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 106. | The ions are attached to anion | | | | | | | |
|  | a) | With a linear F-bridge | | | b) | With an angular F-bridge | | |
|  | c) | With H-bond | | | d) | With tetrahdral F-bridge | | |
| 107. | Which of the following can convert acidified to green? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 108. | Which of the following will displace the halogen from the solution of the halide? | | | | | | | |
|  | a) | added to | b) | added to | c) | added to | d) | added to |
| 109. | This reaction is simply | | | | | | | |
|  | a) | Oxidation | | | b) | Reduction | | |
|  | c) | Redox | | | d) | Hydrolysis in presence of | | |
| 110. | When water is allowed to freeze in the presence of , Kr or under pressure then | | | | | | | |
|  | a) | Atoms of noble gas trapped in the crystal lattice of ice giving clathrates corresponding to the composition | | | | | | | |
|  | b) | These are called noble gas hydrates | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 111. | There is - multiple bonding in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | NO |
| 112. | Among and acidity of is maximum because | | | | | | | |
|  | a) | Oxygen contains two lone pairs of electrons | | | | | | | |
|  | b) | Bond angle in is less than due to VSEPR | | | | | | | |
|  | c) | Oxygen is more electronegative than C or N | | | | | | | |
|  | d) | is an associated liquid | | | | | | | |
| 113. | A group 16 element exists in the monoatomic state in metallic lattice. It also exists in two crystalline forms. The metal is | | | | | | | |
|  | a) | Sulphur | b) | Polonium | c) | Selenium | d) | Tellurium |
| 114. | Consider the following species  I. II. III.  Among these species sigma bond alone is present in | | | | | | | |
|  | a) | I, II, and III | b) | II alone | c) | II and III | d) | I alone |
| 115. | When is passed through cold dil. , the products are | | | | | | | |
|  | a) | and | b) | and | c) |  | d) | and |
| 116. | Consider the following properties of the noble gases  I. They readily form compounds which are colourless  II. They generally do not form ionic compounds  III. They have variable oxidation states in their compounds  IV. Generally do not form covalent compounds  Select the correct properties | | | | | | | |
|  | a) | I, II, III | b) | II, III | c) | I, III | d) | I |
| 117. | Which of the following compounds possesses Lewis acid character?  I. II. III.  Select the correct answer using the codes given below  **Codes** | | | | | | | |
|  | a) | I alone | b) | I, II and III | c) | II and III | d) | I and III |
| 118. | The interhalogen compound not obtained is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 119. | Hypervalent ion is/are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 120. | Consider the following transformations  I.  II.  III. | | | | | | | |
|  | a) | I, II, III | b) | I, III | c) | I, II | d) | II, III |
| 121. | Bleaching of a fabric cloth is done using and excess of chlorine is removed using is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 122. | Second most abundant element in the universe (after hydrogen) is | | | | | | | |
|  | a) |  | b) | Fe | c) | He | d) | Ne |
| 123. | In the following | | | | | | | |
|  | a) | will ionize to give and | | | b) | will giveand | | |
|  | c) | will giveand | | | d) | All of the above are correct | | |
| 124. | Which is/are true statements? | | | | | | | |
|  | a) | Sulphur trioxide exists as cyclic trimer in solid state, | | | | | | | |
|  | b) | Selenium trioxide solid is a cyclic tetramer, | | | | | | | |
|  | c) | is a solid with a network structure in which octahedra share all vertices | | | | | | | |
|  | d) | All of the above are correct | | | | | | | |
| 125. | has | | | | | | | |
|  | a) | linkage | | | | | | | |
|  | b) | linkage | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of these | | | | | | | |
| 126. | Which of the underlined atoms in oxyacids have hybridised atoms? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 127. | Select the correct statement(s) regarding behavior of HF as non- aqueous solvent | | | | | | | |
|  | a) | behaves as an acid and HF as a base | | | | | | | |
|  | b) | behaves as a base and HF as an acid | | | | | | | |
|  | c) | and behave as base and HF as an acid | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 128. | Which one is the strongest bond? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 129. | Bleaching powder is disinfectant for purification of water when water born germs are killed. But disinfectant activity is destroyed. It is due to its disproportion into | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 130. | The colour of the red glass in traffic signals is due to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 131. | Molecule(s) possessing two-centre two electron bonds and three centre-four electron bonds would include | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | alone |
| 132. | Which of the following is used in vulcanization of rubber? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 133. | Alkali ozonides are | | | | | | | |
|  | a) | Paramagnetic in nature | | | | | | | |
|  | b) | Hydrolytically unstable and decompose to superoxides | | | | | | | |
|  | c) | Decreasing in stability as size of alkali metal decreases | | | | | | | |
|  | d) | Having all the above statements as correct | | | | | | | |
| 134. | forms …..with | | | | | | | |
|  | a) | cation and | | | b) | anion and | | |
|  | c) | cation and | | | d) | cation and anion | | |
| 135. | In the presence of acts as | | | | | | | |
|  | a) | An oxidizing agent | b) | A reducing agent | c) | A hydrolyzing agent | d) | A redox reagent |
| 136. | Which one will liberate from | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 137. | Iodine test is shown by | | | | | | | |
|  | a) | Glucose | b) | Starch | c) | Glycogen | d) | Polypeptide |
| 138. | In the preparation of or is treated with and not by conc. and since | | | | | | | |
|  | a) | makes the reaction reversible | | | b) | oxidises to | | |
|  | c) | is water soluble | | | d) | is water soluble | | |
| 139. | Which of the following species have undistorted octahedral structures?  I. II. III. IV.  Select the correct answer using the codes given below | | | | | | | |
|  | a) | II, III and IV | b) | I, III and IV | c) | I, II and III | d) | I, II and IV |
| 140. | The gas not absorbed by coconut charcoal is | | | | | | | |
|  | a) | He | b) | Ne | c) |  | d) | Kr |
| 141. | Electron affinity is positive, when | | | | | | | |
|  | a) | O changes into | | | b) | changes into | | |
|  | c) | O changes into | | | d) | Electron affinity is always negative | | |
| 142. | Which of the following can be used as dehydrating agents? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 143. | Which of the following statements are correct for all three halogens and | | | | | | | |
|  | a) | They all need to gain one electron to acquire stable configuration | | | | | | | |
|  | b) | They all form strong acid of the type H | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 144. | Which is thermocromic? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 145. | Which of the following has peroxy linkage? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 146. | Neon lamps are used in botanical gardens and in green houses as they | | | | | | | |
|  | a) | Provides oxygen | | | b) | Provide better light | | |
|  | c) | Stimulate growth of plants | | | d) | None of the above | | |
| 147. | Aqueous solutions of hydrogen sulphide and sulphur dioxide when mixed together yield | | | | | | | |
|  | a) | Sulphur trioxide and water | | | b) | Sulphur and sulphuric acid | | |
|  | c) | Sulphur and water | | | d) | Hydrogen preroxide and sulphur | | |
| 148. | The correct order of bond length in and is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 149. | When an article is bleached by it loses its colour. The colour can be restored by | | | | | | | |
|  | a) | Exposure to air | b) | Heating | c) | Dilution | d) | None of these |
| 150. | Acid strength of oxoacids of halogen is in order | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 151. | Inter- halogen compounds can be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 152. | Select the correct statement(s) | | | | | | | |
|  | a) | molecule is resonance stabilized | | | | | | | |
|  | b) | There is 3-centre, 4-electron -bond system in | | | | | | | |
|  | c) | Ozone layer is being depleted by fluorocarbons | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 153. | Which has peroxy linkage? | | | | | | | |
|  | a) | Perchloric acid | b) | Hypochloro acid | c) | Para perchloric acid | d) | None of these |
| 154. | The compound which has no reaction with is | | | | | | | |
|  | a) | Perdisulphuric acid | b) | Sulphurous acid | c) | Hydrogen sulphide | d) | Hydrogen peroxide |
| 155. | Which is the best fluorinating agent? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 156. | Which one of the following oxoacids of chlorine is the least oxidizing in nature? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 157. | Which of the following is not known? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 158. | Bleaching powder contains | | | | | | | |
|  | a) | and molecules | | | b) | and ions | | |
|  | c) | and ions | | | d) | ions and molecule | | |
| 159. | Which one of the following acid possesses oxidising, reducing and complex forming properties? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 160. | Xenon fluorides acts as fluoride donor with | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 161. | In | | | | | | | |
|  | a) | - bond between S and O is delocalised | | | b) | Bonds between S and O are equivalents | | |
|  | c) | There is hybridised sulphur atom | | | d) | All of the facts given above are true | | |
| 162. | Tincture of iodine is | | | | | | | |
|  | a) | in alcohol | b) | in alcohol | c) | in | d) | in |
| 163. | The formula for calcium chlorite is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 164. | The mixture of concentrated and made in 3:1 ratio contains | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 165. | The greater reactivity of is due to | | | | | | | |
|  | a) | Lower electron affinity of | | | b) | Lower bond energy of bond | | |
|  | c) | Higher electronegativity of | | | d) | Gaseous state of | | |
| 166. | Which has maximum value? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 167. | To a piece of charcoal sulphuric acid is added. Then | | | | | | | |
|  | a) | There is no reaction | | | b) | Water gas is formed | | |
|  | c) | and evolved | | | d) | CO and are evolved | | |

**Multiple Correct Answers Type**

| 168. | Base on the values gives | | | | | | | |
|  | a) | Oxidizing power of is maximum | | | b) | Oxidizing power of is maximum | | |
|  | c) | Oxidizing power is in order | | | d) | Oxidizing power is in order | | |
| 169. | Which of the following statements is/are correct? | | | | | | | |
|  | a) | has much lower entropy | | | | | | | |
|  | b) | Transition of to takes place, across the line K | | | | | | | |
|  | c) | It has very high viscosity | | | | | | | |
|  | d) | is unique liquid that exhibits superconductivity | | | | | | | |
| 170. | Helium is used | | | | | | | |
|  | a) | As a refrigerant (in liquid form) in low-temperature physics | | | | | | | |
|  | b) | As a substituent for nitrogen in the breathing gas for deep-sea diverse | | | | | | | |
|  | c) | In radiation therapy | | | | | | | |
|  | d) | In fluorescent tubes | | | | | | | |
| 171. | Complete hydrolysis of gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 172. | Select the correct statement(s) | | | | | | | |
|  | a) | Chile saltpetre is a main source of | | | | | | | |
|  | b) | is reduced to and which in turn oxidized to by in acidic medium | | | | | | | |
|  | c) | Anhydrous HF is a non-conductor of electricity | | | | | | | |
|  | d) | is obtained by electrolysis of molten | | | | | | | |
| 173. | and form two separate immiscible layers (orange) and (violet) are soluble in organic layer due to a greater extent. In test tube and test tube gas is passed then (Base on the values gives  ) | | | | | | | |
|  | a) | Organic layer in appear violet | | | | | | | |
|  | b) | Organic layer in appear orange | | | | | | | |
|  | c) | Organic layer in appear violet | | | | | | | |
|  | d) | Organic layer in first appear violet then orange | | | | | | | |
| 174. | Concentrated sulphuric acid is | | | | | | | |
|  | a) | Oxidising agent | b) | Hygroscopic | c) | Efflorescent | d) | Sulphonating agent |
| 175. | Select the correct statement(s) | | | | | | | |
|  | a) | Colours of the halogens in the gas phase are complimentary colours | | | | | | | |
|  | b) | Colour is due to transition of an electron from the highest occupied molecular orbital to the lowest unoccupied molecular orbital | | | | | | | |
|  | c) | is paramagnetic due to unpaired electrons | | | | | | | |
|  | d) | dimerises to as dimerises to | | | | | | | |
| 176. | Pyrophosphorous acid, | | | | | | | |
|  | a) | Is dibasic acid | | | b) | Contains P in + 5 oxidation state | | |
|  | c) | Contains one bond | | | d) | Is strongly reducing in nature | | |
| 177. | In the structure of | | | | | | | |
|  | a) | , bond angle is smaller than the tetrahedral angle because of lone-pair lone pair repulsion | | | | | | | |
|  | b) | , there is hybridisation with bond angle of | | | | | | | |
|  | c) | , there are six bonding electrons and no lone pairs | | | | | | | |
|  | d) | , two F-atoms one at equatorial positions and two are inclined at an angle less than due to lone pair-bond pair repulsion | | | | | | | |
| 178. | Select the correct statement(s) | | | | | | | |
|  | a) | value of HI (strongest halogen acid) is most negative | | | | | | | |
|  | b) | High bond strength makes a weak acid in dilute aqueous solution | | | | | | | |
|  | c) | Halogen forms clatharates by freezing solution in water | | | | | | | |
|  | d) | values of is in order of | | | | | | | |
| 179. | Which of the following statements is/are correct? | | | | | | | |
|  | a) | is linear molecule | | | b) | has square planar structure | | |
|  | c) | is linear molecule | | | d) | has square planar structure | | |
| 180. | In the conversion of to | | | | | | | |
|  | a) | There is anodic oxidation in basic solution | | | | | | | |
|  | b) | Equivalent mass of is 20 (atomic weight of Br = 80) | | | | | | | |
|  | c) | There is anodic oxidation in acidic medium | | | | | | | |
|  | d) | There is cathodic reduction in basic solution | | | | | | | |
| 181. | hybridization is involved in the molecules of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 182. | White phosphorus has | | | | | | | |
|  | a) | angle of | | | b) | Six single bond | | |
|  | c) | Four single bond | | | d) | Four lone pairs of electrons | | |
| 183. | Which of the following statement is incorrect? | | | | | | | |
|  | a) | is paramagnetic, is also paramagnetic | | | | | | | |
|  | b) | is paramagnetic, is also paramagnetic | | | | | | | |
|  | c) | is paramagnetic, is diamagnetic | | | | | | | |
|  | d) | Different observation is found in their bond lengths increase when | | | | | | | |
| 184. | Select the correct statement(s) about the | | | | | | | |
|  | a) | They are thermodynamically stable | | | | | | | |
|  | b) | bond energy is very high | | | | | | | |
|  | c) | They are endothermic compounds | | | | | | | |
|  | d) | They are exothermic compounds | | | | | | | |
| 185. | Which are correct statements? | | | | | | | |
|  | a) | All halogens form oxoacids | | | | | | | |
|  | b) | All halogens show oxidation glass | | | | | | | |
|  | c) | Hydrofluoric acid forms and and attacks glass | | | | | | | |
|  | d) | Oxidizing power is in order | | | | | | | |
| 186. | Oxidising agent(s) is/are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 187. | Fractional evaporation of liquid argon under reduced pressure gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 188. | In the conversion of to | | | | | | | |
|  | a) | There is no change in oxidation number | | | | | | | |
|  | b) | Reduction takes place in basic solution | | | | | | | |
|  | c) | Reaction also takes place by | | | | | | | |
|  | d) | Equivalent mass of is one-half of ionic mass | | | | | | | |
| 189. | Select the correct statement(s). Bond order of | | | | | | | |
|  | a) | is zero | b) | is 0.5 | c) | is 1.0 | d) | is zero |
| 190. | Which practical is/are supposed to be correct? | | | | | | | |
|  | a) | Preparation of in glass or quartz apparatus | | | b) | Storing of HF in glass or quartz apparatus | | |
|  | c) | Storing of in vessel | | | d) | Storing of in vessel | | |
| 191. | Which is/are Lewis acid as well as Lewis base (amphoteric)? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 192. | The correct statement(s) about is (are) | | | | | | | |
|  | a) | bond length are equal | | | b) | Thermal decomposition of is endothermic | | |
|  | c) | is diamagnetic in nature | | | d) | has a bent structure | | |
| 193. | The unbalanced chemical reactions given in Column I show missing reagent or condition (?) which are provided in Column II. Match Column I with Column II and select the correct answer using the code given below the Column   |  |  |  |  | | --- | --- | --- | --- | |  | **Column I** |  | **Column II** | | **P.**  **Q.**  **R.**  **S.** | other product  +  + other product  other product  other product | **1.**  **2.**  **3.**  **4.** | **NO**  Warm |   **Codes**  P Q R S | | | | | | | |
|  | a) | 4 2 3 1 | | | b) | 3 2 1 4 | | |
|  | c) | 1 4 2 3 | | | d) | 3 4 2 1 | | |
| 194. | Select the correct statement(s) | | | | | | | |
|  | a) | and are used as bleaching agents for paper pulp and textiles | | | | | | | |
|  | b) | salts are used as detergents | | | | | | | |
|  | c) | disproportionates in alkaline medium | | | | | | | |
|  | d) | is oxidized to by in acidic medium | | | | | | | |
| 195. | Select the correct statement(s) | | | | | | | |
|  | a) | The noble gases are present to the extent of about 1% in the earth’s atmosphere, the chief component being argon | | | | | | | |
|  | b) | Helium is the second most abundant element in the universe after hydrogen | | | | | | | |
|  | c) | There are two stable isotopes of helium | | | | | | | |
|  | d) | is formed by thermonuclear fusion reaction in stars | | | | | | | |
| 196. | In the following reaction, | | | | | | | |
|  | a) | is an oxidizing agent | | | b) | is a reducing agent | | |
|  | c) | is oxidized to | | | d) | is reduced to HF | | |
| 197. | Which of the following is present in an electric discharge tube containing helium? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assertion - Reasoning Type** | | | |
| This section contain(s) 0 questions numbered 198 to 197. Each question containsstatement 1(Assertion) and statement 2(Reason). Each question has the 4 choices (a), (b), (c) and (d) out of which **only one** is correct. | | | |
|  | a) | Statement 1 is True, Statement 2 is True; Statement 2 **is** correct explanation for Statement 1 | |
|  | b) | Statement 1 is True, Statement 2 is True; Statement 2 **is not** correct explanation for Statement 1 | |
|  | c) | Statement 1 is True, Statement 2 is False | |
|  | d) | Statement 1 is False, Statement 2 is True | |

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| --- | --- | --- | --- |
| 198 |  | | |
|  | **Statement 1:** | | Among chalcogens, tendency of catenation is maximum for sulphur. |
|  | **Statement 2:** | | S-S bond dissociation energy is higher then O-O bond dissociation energy. |

|  |  |  |  |
| --- | --- | --- | --- |
| 199 |  | | |
|  | **Statement 1:** | | The van der Waals’ forces are directly proportional to the ionisation potentials |
|  | **Statement 2:** | | Van der Waals’ forces increases as the size and diffuseness of the electron clouds increases |

|  |  |  |  |
| --- | --- | --- | --- |
| 200 |  | | |
|  | **Statement 1:** | | is covalent in gaseous and liquid states but ionic in solid state |
|  | **Statement 2:** | | in solid state consists of tetrahedral cation and octahedral anion |

|  |  |  |  |
| --- | --- | --- | --- |
| 201 |  | | |
|  | **Statement 1:** | | Helium and beryllium have similar outer electronic configuration of the type |
|  | **Statement 2:** | | Helium and beryllium both are chemically inert |

|  |  |  |  |
| --- | --- | --- | --- |
| 202 |  | | |
|  | **Statement 1:** | | Oxygen is more electronegative than sulphur, yet is acidic, while is neutral |
|  | **Statement 2:** | | bond is weaker than bond |

|  |  |  |  |
| --- | --- | --- | --- |
| 203 |  | | |
|  | **Statement 1:** | | OF2 is named as oxygen difluoride. |
|  | **Statement 2:** | | OF2 is oxygen is less electronegative than fluorine. |

|  |  |  |  |
| --- | --- | --- | --- |
| 204 |  | | |
|  | **Statement 1:** | | White phosphorus is more reactive than red phosphorus. |
|  | **Statement 2:** | | red phosphorus consists of P4 tetrahedral units linked to one another to form linear chains. |

|  |  |  |  |
| --- | --- | --- | --- |
| 205 |  | | |
|  | **Statement 1:** | | Helium is the only substance that can’t be solidified at atmospheric pressure |
|  | **Statement 2:** | | The zero point energy of helium is very high |

|  |  |  |  |
| --- | --- | --- | --- |
| 206 |  | | |
|  | **Statement 1:** | | Red phosphorus is less volatile than white phosphorus |
|  | **Statement 2:** | | Red phosphorus has a discrete tetrahedral structure |

|  |  |  |  |
| --- | --- | --- | --- |
| 207 |  | | |
|  | **Statement 1:** | | The ionization energy of gallium remains nearly same as that of aluminium. |
|  | **Statement 2:** | | This is due to shielding of outer shell electrons form the nucleus by the d electrons of gallium. |

|  |  |  |  |
| --- | --- | --- | --- |
| 208 |  | | |
|  | **Statement 1:** | | All the noble gases have electronic configuration in their outermost shell |
|  | **Statement 2:** | | In noble gases all the energy levels which are occupied are completely filled |

|  |  |  |  |
| --- | --- | --- | --- |
| 209 |  | | |
|  | **Statement 1:** | | The aqueous solution of is powerful oxidizing agent |
|  | **Statement 2:** | | The hydrolysis of is show in dilute acid but rapid in basic solution |

|  |  |  |  |
| --- | --- | --- | --- |
| 210 |  | | |
|  | **Statement 1:** | | Liquid NH3 is used for refrigeration. |
|  | **Statement 2:** | | Liquid NH3 does not vaporize quickly. |

|  |  |  |  |
| --- | --- | --- | --- |
| 211 |  | | |
|  | **Statement 1:** | | Ozone is a powerful oxidizing agent in comparison to |
|  | **Statement 2:** | | Ozone is diamagnetic but is paramagnetic |

|  |  |  |  |
| --- | --- | --- | --- |
| 212 |  | | |
|  | **Statement 1:** | | are thermally unstable |
|  | **Statement 2:** | | They produce same gas on thermal decomposition |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Matrix-Match Type** | | | | | | | | | |
| This section contain(s) 0 question(s). Each question contains Statements given in 2 columns which have to be matched. Statements (A, B, C, D) in **columns I** have to be matched with Statements (p, q, r, s) in **columns II**. | | | | | | | | | |

| 213. | Match list I (Molecules) with list II (Boiling points) and select the correct answer | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | NH3 | | (p) | | 290K | |
|  | **(B)** | PH3 | | (q) | | 211K | |
|  | **(C)** | AsH3 | | (r) | | 186K | |
|  | **(D)** | SbH3 | | (s) | | 264K | |
|  | **(E)** | BiH3 | | (t) | | 240K | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** | **E** |  |
|  | **a)** | r | q | t | s | p |  |
|  | **b)** | t | r | q | r | p |  |
|  | **c)** | p | s | t | q | p |  |
|  | **d)** | p | q | r | s | p |  |

| 214. | Match molecules/ions (in Column I) with their shapes (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | | Square planar | |
|  | **(B)** |  | | (q) | | T-shaped | |
|  | **(C)** |  | | (r) | | Tetrahedral | |
|  | **(D)** |  | | (s) | | Pyramidal | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | b | a | d | c |  |  |
|  | **b)** | c | a | b | d |  |  |
|  | **c)** | b | c | a | d |  |  |
|  | **d)** | d | c | a | b |  |  |

| 215. | Match the compounds (in Column I) with the structures (in Column II) | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | | Distorted octahedral | |
|  | **(B)** |  | | (q) | | Tetrahedral | |
|  | **(C)** |  | | (r) | | Square planar | |
|  | **(D)** |  | | (s) | | Pyramidal | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | c | a | d | b |  |  |
|  | **b)** | d | c | a | b |  |  |
|  | **c)** | a | b | d | c |  |  |
|  | **d)** | b | d | a | c |  |  |

| 216. | All the compounds listed in Column I react with water. Match the result of the respective reactions with the appropriate option listed in Column II | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | | Hydrogen halide formation | |
|  | **(B)** |  | | (q) | | Redox reaction | |
|  | **(C)** |  | | (r) | | Reacts with glass | |
|  | **(D)** |  | | (s) | | Polymerization | |
|  |  |  | | (t) | | formation | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | a | a,b,e | a,b,c,d | b |  |  |
|  | **b)** | a,d | a,b,c,d | a,b,e | a |  |  |
|  | **c)** | a | a, d | a,b,e | a,b,c,d |  |  |
|  | **d)** | a,b,e | a,b,c,d | a | a, d |  |  |

| 217. | Match the acids (in Column I) with number of acid salts formed by them (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
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|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Hypophosporous acid | | (p) | | Two | |
|  | **(B)** | Orthophosphorous acid | | (q) | | Zero | |
|  | **(C)** | Orthophosphoric acid | | (r) | | One | |
|  | **(D)** | Mellitic acid | | (s) | | Five | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | b | c | a | d |  |  |
|  | **b)** | c | a | b | d |  |  |
|  | **c)** | a | b | d | c |  |  |
|  | **d)** | b | d | a | c |  |  |

| 218. | Match the types of glass (in Column I) with their characteristics (in Column II) | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Alumino –silicate glass | | (p) | | Very high transparency | |
|  | **(B)** | Calcium –alkali silicate glass | | (q) | | Cheap laboratory glass-wares | |
|  | **(C)** | Lead glass | | (r) | | Optical glass | |
|  | **(D)** | Soda glass | | (s) | | Domestic glass for window | |
|  |  |  | | (t) | | Low coefficient of expansion | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | A | b | c | d |  |  |
|  | **b)** | e | d | c | b |  |  |
|  | **c)** | e | d | b | c |  |  |
|  | **d)** | d | b | e | c |  |  |

| 219. | Match the compounds (in Column I) with the structures (in Column II) | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | | Crown | |
|  | **(B)** |  | | (q) | | Dimer | |
|  | **(C)** |  | | (r) | | Tetrahedral | |
|  | **(D)** |  | | (s) | | Linear | |
|  |  |  | | (t) | | Trigonal bipyramid | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | c | d | a | c |  |  |
|  | **b)** | a | b | c | e |  |  |
|  | **c)** | c | e | a | b |  |  |
|  | **d)** | c | a | b | e |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Linked Comprehension Type**  This section contain(s) 19 paragraph(s) and based upon each paragraph, multiple choice questions have to be answered. Each question has atleast 4 choices (a), (b), (c) and (d) out of which **only one** is correct.  **Paragraph for Question Nos. 220 to -220** | | | | | | | | |
| Due to the presence of two lone pairs of electrons on the central atom, hydrides of this group elements have bent (V) shapes. The central atom in these hydrides is sp3 hybridized. Due to strong H-bonding m.p. and bp. of hydride of oxygen are very high. On moving down the group, the covalent character increases. This can be explained on the basis of Fajans rule, which states that the tendency to form covalent bonds increases as the size of the anion M2- increases. As the size of the atom in H2M increases, the strength of H-M bond decreases, Hence, the tendency to release hydrogen as proton increases down the group | | | | |

| 220. | Bond angle is minimum for | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 221 to - 221** | | | | | | | | |

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| The trihalides of this group elements are predominantly covalent and have pyramidal structures, with a lone pair of electrons in the fourth orbital. Except NE3 and PF3, the trihalides are readily hydrolysed by water. They are Lewis bases because of the presence of lone pair of electrons. Due to absence of d-orbitals in its valence shell, nitrogen does not form pentahalides, while P, As and Sb form pentahalides due to unsymmetrical shape where some bond angles are of 90° and other are of 120°.PCl5 is not very stable. It behave as a good chlorinating agent | | | | |

| 221. | Which of the following compound is not known? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 222 to - 222** | | | | | | | | |

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| The noble gases have closed shell electronic configuration and are monatomic gases under normal conditions. The low boiling points of the lighter noble gases are due to weak dispersion forces between the atoms and the absence of other interactions. Xenon reacts directly only with F2 and gives compound from oxidation states II to VIII are known. XeF4 and XeF6 are violently hydrolysed by water to give stable aqueous solution of XeO3 | | | | |

| 222. | on reaction with gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 223 to - 223** | | | | | | | | |

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| --- | --- | --- | --- | --- |
| It is difficult to liquify noble gases as their atoms are held by weak van der Waals’ forces. Noble gases have stable ns2np6 fully filled electronic configuration, so, ionisation energy of noble gases is very high. They are slightly soluble in water. Their solubility generally increases with the increases in atomic number. The m.p and b.p. increases from He to Rn because of increase in magnitude of van der Waals’ forces | | | | |

| 223. | Which of the following noble gases is the least polarizable? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 224 to - 225** | | | | | | | | |

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| Peroxydisulphuric acid and its salts are powerful oxidizing agents, thus can be used to estimate reducing agents and also to study the kinetics of the reactionAnswer the following questions | | | | |

| 224. | Peroxydisulphuric acid | | | | | | | |
|  | a) | Is also called Marshall’s acid | | | b) | Has two peroxy linkages | | |
|  | c) | Liberates with KI in a fast reaction | | | d) | Has oxidation number of sulphur as +7 | | |
| **Paragraph for Question Nos. 225 to - 226** | | | | | | | | |

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| Two acids have been derived from H2O2 by replacing H by SO2OH group. Both the acids have one peroxy linkage H-O-O-HBased on the above study answer the following questions | | | | |

| 225. | Which is called Marshall’s acid and which is called Caro’s acid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 226 to - 227** | | | | | | | | |

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| --- | --- | --- | --- | --- |
| Sodium thiosulphate is the laboratory reagent used in iodometric and iodimetric titration. This also finds used in photographyBased on the above passage , answer the following questions | | | | |

| 226. | If is the titre in a titration and is formed in situin a titration , then these are respectively | | | | | | | |
|  | a) | Iodometric, iodimetric | | | b) | Iodimetric, Iodometric | | |
|  | c) | Both Iodimetric | | | d) | Both Iodometric | | |
| **Paragraph for Question Nos. 227 to - 228** | | | | | | | | |

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| --- | --- | --- | --- | --- |
| When metallic copper is heated with conc. sulphuric acid , various types of products are formed depending on standard reduction potentialAnswer the following questions based on the above study | | | | |

| 227. | Which reaction is possible? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| **Paragraph for Question Nos. 228 to - 228** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Consider the following change,BrO2→Br2O+ABrO2 and A are formed by the change of equal number oxidation numberBased on this change, answer the following questions | | | | |

| 228. | Oxide could be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 229 to - 229** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| This question concerns the elements of Group 17- fluorine, chlorine, bromine and iodineWhen sodium chloride is treated with concentrated sulphuric acid, a colourless gas, X , which fumes in moist air, is formed. When sodium iodide is treated in the same way a coloured vapour, Y, is productIf 90% phosphoric(v) acid is used instead of sulphuric acid, a colourless gas is produced in each reaction | | | | |

| 229. | Gases and are respectively | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 230 to - 230** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Water pollution can be by dissolved gases. Bad smell of water is due to H2S and can be removed by treatment with bleaching powderCaOCl2+ H2O→CaOH2aq+Cl2aqBleaching powderH2Saq+Cl2aq→2HClaq+S(s)Based on the above treatment answer the following questions | | | | |

| 230. | If content of contaminated water is 22 ppm by mass, required to remove all the from 200 gallons of water (1 gallon = 3.785 L) is | | | | | | | |
|  | a) | 30.00 g | b) | 71.00 g | c) | 17.5 g | d) | 35.00 g |
| **Paragraph for Question Nos. 231 to - 231** | | | | | | | | |

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| XeO3 is an oxidizing agent and this can be used to estimate reducing agentsI: XeO3+6H++9I-→Xe+3H2O+3I3-II: XeO3+6H++6Fe2+→Xe+3H2O+6Fe3+Answer the following questions | | | | |

| 231. | Reaction can be studied by measuring pressure of the reaction mixture with time variation can be of the type | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 232 to - 232** | | | | | | | | |

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| XeO3 is one of the strong oxidising agents in aqueous media :I:XeO3+6H++6e-⇌Xe+3H2O, E°=2.1 VII:HXeO4-+3H2O+6e-⇌Xe+7OH-, E°=1.2 VAnswer the following questions | | | | |

| 232. | Which reaction is more spontaneous theoretically? | | | | | | | |
|  | a) | I | b) | II | c) | Both equally | d) | Can’t be predicted |
| **Paragraph for Question Nos. 233 to - 233** | | | | | | | | |

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| Bleaching powder and bleach solution are produced on a large scale and used in several house hold products. The effectiveness of bleach solution is often measured by iodometry | | | | |

| 233. | 25 mL of household bleach solution was mixed with 30 mL of 0.50 M KI and 10 mL of 4 N acetic acid. In the titration of the liberated iodine, of 0.25 N was used to reach the end point. The molarity of the household bleach solution, is | | | | | | | |
|  | a) | 0.48 M | b) | 0.96 M | c) | 0.24 M | d) | 0.024 M |
| **Paragraph for Question Nos. 234 to - 234** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The reaction of Cl2 gas with cold-dilute and hot concentrated NaOH in water give sodium salts of two (different) oxoacids of chlorine, P and Q respectively. The Cl2 gas reacts with SO2 gas, in the presence of charcoal, to give a product R. R reacts with white phosphorus to give a compound S. On hydrolysis, S gives an oxoacid of phosphorus T | | | | |

| 234. | and respectively, are the sodium salts of | | | | | | | |
|  | a) | Hypochlorous and chloric acids | | | b) | Hypochlorous and chlorous acids | | |
|  | c) | Chloric and perchloric acid | | | d) | Chloric and hypochlorous acids | | |

**Integer Answer Type**

| 235. | In the following reaction ,  equivalent mass of | | | | | | | |
| 236. | disproportionates to and species such that equivalent mass of is 71. Thus, oxidation number of chlorine in species is ………. | | | | | | | |
| 237. | How many of the following can be the oxidizing agent? | | | | | | | |
| 238. | How many bonds are there in ? | | | | | | | |
| 239. | For inert gases | | | | | | | |
| 240. | Bond –order of is …… | | | | | | | |
| 241. | How many lone-pairs and bond-pairs are present in ? | | | | | | | |
| 242. | is paramagnetic due to …… unpaired electron(s) | | | | | | | |
| 243. | is paramagnetic due to ..…. unpaired electrons | | | | | | | |
| 244. | (bleaching powder) has two types chlorine with different oxidation numbers . Sum of oxidation number is ……… | | | | | | | |
| 245. | turns lime water milky, 3.2 g of gives milkyness ……. g | | | | | | | |
| 246. | In there are ……. lone pairs of electron | | | | | | | |
| 247. | Number of electrons forming bond between and in is …….. | | | | | | | |
| 248. | Reaction of with in hot aqueous solution gives sodium bromide and sodium bromate with the evolution of gas. The number of sodium bromide molecules involved in the balanced chemical equation is …… | | | | | | | |
| 249. | In the following reaction ,  equivalent mass of | | | | | | | |
| 250. | Total number of hybrid orbitals in is …….. | | | | | | | |
| 251. | Maximum oxidation state shown by sulphur in its compound is….. | | | | | | | |
| 252. | -character in is 1/ ……… of total hybrid orbitals | | | | | | | |
| 253. | Out of how many forms compounds with positive oxidation state? | | | | | | | |
| 254. | How many of them are water insoluble? | | | | | | | |
| 255. | How many lone- pairs are present in ? | | | | | | | |
| 256. | How many SOS angles are there in | | | | | | | |
| 257. | has odd-electron bonds. How many electrons are involved in () bond? | | | | | | | |
| 258. | reduces to ; change in oxidation number of Cr is…… | | | | | | | |
| 259. | There is also formation of insoluble (black) when copper reacts with conc. . What is change in oxidation number of sulphur? | | | | | | | |
| 260. | Maximum acidic character is shown by the oxyacids of halogens with oxidation number of halogens as ……. | | | | | | | |
| 261. | How many of the following  have peroxy linkages? | | | | | | | |
| 262. | 500 mL of chlorine contaminated water is treated with KI and mixture required 100 mL of 0.01 M hypo. What is concentration of in millimoles per litre? | | | | | | | |
| 263. | and in acidic medium forms where | | | | | | | |
| 264. | reacts with quartz forming  What is the value of ? | | | | | | | |
| 265. | Acid rain is due to dissolved non-mettalic oxides . 10 mL of acid rain sample required 5 mL of 0.01 M for making it neutral. What is pH of acid rain? | | | | | | | |
| 266. | Ozonolys is of 2, 5 –dimethyl -2, 4-hex-diene gives total number of carbonyl compounds…….. | | | | | | | |
| 267. | How many of the following have underlined atoms in different oxidation state s? | | | | | | | |
| 268. | 6.35 of impure bleaching powder paste is mixed with KI and formed required 50 mL of 0.1 M hypo in neutral medium. Thus % purity of bleaching powder is…… | | | | | | | |
| 269. | Number phases in the following equilibrium is | | | | | | | |
| 270. | is…… | | | | | | | |
| 271. | Electrons left in the valence shell when is converted to is …… | | | | | | | |
| 272. | disproportionates in aqueous solution to and is formed from which oxidation state (………) | | | | | | | |
| 273. | Out of the following how many have in hybridisation? | | | | | | | |
| 274. | There are equal number of sulphur atoms in thiosulphuric acid, Marshall’s acid and oleum. This number is…… | | | | | | | |
| 275. | and are two isotopes of chlorine in mass ratio of where …… | | | | | | | |
| 276. | One mole of on hydrolysis gives acids which can be neutralized by …….. moles of NaOH | | | | | | | |
| 277. | changes to in a nuclear reaction by  Emission of -particles only. Pressure exerted per unit volume in a closed vessel at temperature after two half-life was . What is value of ? | | | | | | | |
| 278. | Number of series of salts formed by hydrofluoric acid is …… | | | | | | | |
| 279. | reduces to . Number of electrons involved in the reduction of to is …… | | | | | | | |
| 280. | There are total of …….. -bonds in | | | | | | | |
| 281. | How many of the following have atom in hybridised state? | | | | | | | |
| 282. | There are two types of sulphur with different oxidation states in thiosulphate ion. Difference in oxidation states is ……… | | | | | | | |
| 283. | 4.35 g of pyrolusite mineral is digested with conc. HCl and KI added. Mixture required 5 mL of 1 M solution for complete reaction of formed. What is % of pure in pyrolusite? (Mn = 55) | | | | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 506**

**Time :** 16:24:00 **CHEMISTRY**

**Marks :** 954

7.THE P-BLOCK ELEMENTS

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| **: ANSWER KEY :** |

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| **1) d 2) b 3) d 4) d**  **5) d 6) d 7) d 8) d**  **9) d 10) c 11) d 12) a**  **13) b 14) a 15) c 16) d**  **17) a 18) b 19) a 20) a**  **21) a 22) a 23) c 24) b**  **25) d 26) c 27) a 28) d**  **29) d 30) a 31) a 32) b**  **33) a 34) c 35) d 36) c**  **37) d 38) b 39) d 40) c**  **41) c 42) a 43) a 44) a**  **45) b 46) d 47) d 48) a**  **49) b 50) b 51) a 52) b**  **53) a 54) c 55) c 56) b**  **57) d 58) c 59) b 60) a**  **61) a 62) b 63) b 64) c**  **65) a 66) c 67) b 68) d**  **69) c 70) d 71) b 72) d**  **73) b 74) b 75) a 76) b**  **77) c 78) b 79) b 80) a**  **81) a 82) a 83) b 84) a**  **85) b 86) c 87) a 88) b**  **89) a 90) b 91) c 92) b**  **93) b 94) a 95) d 96) c**  **97) c 98) a 99) a 100) c**  **101) a 102) a 103) b 104) d**  **105) a 106) a 107) c 108) a**  **109) d 110) c 111) a 112) c**  **113) b 114) d 115) a 116) b**  **117) a 118) d 119) d 120) a**  **121) d 122) c 123) d 124) d**  **125) c 126) c 127) c 128) c**  **129) b 130) d 131) d 132) a**  **133) d 134) d 135) b 136) d**  **137) b 138) b 139) d 140) a**  **141) b 142) d 143) c 144) a**  **145) b 146) c 147) c 148) a**  **149) a 150) b 151) d 152) d**  **153) d 154) a 155) c 156) d**  **157) c 158) c 159) a 160) d**  **161) d 162) b 163) d 164) b**  **165) b 166) a 167) c 1) a,c 2) a,b,d 3) a,b 4) a,b,d**  **5) a,b,c,d 6) a,c 7) a,b,d 8) a,b,c**  **9) a,c,d 10) a,c,d 11) a,b,c,d 12) a,d**  **13) a,b 14) b,d 15) a,b,d 16) a,b,d**  **17) a,b,d 18) c,d 19) a,b,c,d 20) b,c,d**  **21) a,b,c,d 22) a,b,c,d 23) c 24) c**  **25) a,c,d 26) d 27) a,c,d 28) a,b,d**  **29) a,c 30) a,c,d 1) a 2) d 3) b 4) c**  **5) a 6) a 7) b 8) a**  **9) c 10) a 11) d 12) b**  **13) a 14) b 15) b 1) b 2) c 3) a 4) b**  **5) a 6) b 7) d 1) c 2) a 3) a 4) c**  **5) a 6) b 7) b 8) b**  **9) c 10) b 11) d 12) a**  **13) a 14) c 15) a 1) 6 2) 1 3) 2 4) 0**  **5) 3 6) 1 7) 7 8) 1**  **9) 2 10) 0 11) 6 12) 2**  **13) 3 14) 5 15) 2 16) 4**  **17) 6 18) 4 19) 5 20) 5**  **21) 2 22) 3 23) 3 24) 6**  **25) 8 26) 7 27) 4 28) 1**  **29) 3 30) 3 31) 2 32) 3**  **33) 6 34) 5 35) 2 36) 6**  **37) 0 38) 8 39) 2 40) 2**  **41) 1 42) 4 43) 3 44) 2**  **45) 5 46) 3 47) 5 48) 8**  **49) 5** | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 506**

**Time :** 16:24:00 **CHEMISTRY**

**Marks :** 954

7.THE P-BLOCK ELEMENTS

|  |
| --- |
| **: HINTS AND SOLUTIONS :** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | **(d)** | | | | | | | |
| 5 | **(d)**  ⟶Ba(s)+3N2(g)  Azide salt of barium can be obtained in purest form as well as the decomposition product contain solid Ba as by product alongwith gaseous nitrogen hence to additional step of separation is required.  Other reaction are  NH4 NO3 N2O+2H2O  2 NH3 + 3CuO 3Cu+3H2O+N2  (NH4)2Cr2O7 Cr2O3 +4H2O +N2 | | | | | | | |
| 6 | **(d)**  Oxygen family elements (O, S, Se, Te, Po) are called chalcogen | | | | | | | |
| 10 | **(c)**  Monobasic, as only one attached to O-atom | | | | | | | |
| 14 | **(a)**  have peroxy linkage  perchloric acid] no peroxy linkage | | | | | | | |
| 16 | **(d)** | | | | | | | |
| 17 | **(a)**  Being smallest in size | | | | | | | |
| 18 | **(b)** | | | | | | | |
| 24 | **(b)**  Pyrogallol dissolves | | | | | | | |
| 32 | **(b)**  White  black | | | | | | | |
| 34 | **(c)**  (a)  (b)    ( c) KMnO4+O3⟶no reaction  Because in KMnO4, oxidation state of Mn is +7. Hence, it is the highest oxidation state of Mn, so KMnO4 is not oxidized by ozone.  (d ) | | | | | | | |
| 36 | **(c)** | | | | | | | |
| 37 | **(d)**    Yellow light green  Black  Turnbull’s blue | | | | | | | |
| 41 | **(c)**  Black phosphorous is highest thermodynamic stable form in red , black , white and yellow allotropic forms of phosphorus because its ignition temperature is highest hence it is inert and has a layer structure. | | | | | | | |
| 43 | **(a)** | | | | | | | |
| 47 | **(d)** | | | | | | | |
| 48 | **(a)** | | | | | | | |
| 49 | **(b)** | | | | | | | |
| 50 | **(b)**  is dehydrating agent | | | | | | | |
| 53 | **(a)** | | | | | | | |
| 54 | **(c)** | | | | | | | |
| 58 | **(c)**  is the side produced in the extraction of from called blue- vitriol | | | | | | | |
| 60 | **(a)**  also oxidizes to forming violet layer in  violet | | | | | | | |
| 62 | **(b)**  Fluorine shows only ) oxidation state | | | | | | | |
| 63 | **(b)** | | | | | | | |
| 64 | **(c)**  and are bleaching agent  Black White  Bleaching property | | | | | | | |
| 67 | **(b)**  tetrahedral | | | | | | | |
| 69 | **(c)**  or | | | | | | | |
| 74 | **(b)**  Bond- energy decreases going down the group | | | | | | | |
| 75 | **(a)** | | | | | | | |
| 76 | **(b)**  Oxidising power of | | | | | | | |
| 79 | **(b)**  White phosphorus on reaction with limited supply of oxygen gives lower oxide P4O6.  Therefore, air(O2 + N2) is a good source for controlled supply ofoxygen and the best choice for controlled oxidation of white phosphorus into lower oxide P4O6. | | | | | | | |
| 81 | **(a)**  is formed as side product when reacts with or DMS and thus further oxidation of to is prevented | | | | | | | |
| 83 | **(b)** | | | | | | | |
| 86 | **(c)**  = 0.1 equivalent  Thus, equivalent  in 10 g sample  Thus, % purity = 63.5% | | | | | | | |
| 90 | **(b)** | | | | | | | |
| 91 | **(c)**  ion is released by | | | | | | | |
| 93 | **(b)**  H2S2O8 (Marshall’s acid)has O—O linkage.  Structure of H2S2O8 is given as follows: | | | | | | | |
| 95 | **(d)**  Ions are formed hence conducting | | | | | | | |
| 98 | **(a)**  The structure of H3PO3 is given as    In this structure two —OH group are present, so it is dibasic acid. In it one P—H bond is present, so it provides hydrogen and due to such hydrogen it acts as reducting agent. | | | | | | | |
| 101 | **(a)**  Acid strength oxidation number ofatom    +1 +3 +5 +7 | | | | | | | |
| 102 | **(a)**  If acid is weak, its conjugate base is strong and vice-versa  Acid strength  Conjugate base strength  is the weakest base | | | | | | | |
| 103 | **(b)**  solution is acidic due to hydrolysis  is not precipitated in acidic medium, but in neutral medium. formed is neutralized by | | | | | | | |
| 104 | **(d)**  PCl5 produces POCl3 with the following reagents  PCl5+ SO2⟶POCl3+SOCl2  PCl5+H2O⟶POCl3+2HCl  6PCl5+P4O10⟶10POCl3 | | | | | | | |
| 107 | **(c)**  green  green  green | | | | | | | |
| 108 | **(a)**  Oxidizing power of | | | | | | | |
| 111 | **(a)**  - orbital is present in sulphur (in excited state) | | | | | | | |
| 115 | **(a)** | | | | | | | |
| 117 | **(a)**  Boron is electron- deficient in | | | | | | | |
| 118 | **(d)**  Due to steric effect | | | | | | | |
| 119 | **(d)**  Oxidation number of  Thus, maximum value | | | | | | | |
| 121 | **(d)** | | | | | | | |
| 127 | **(c)** | | | | | | | |
| 129 | **(b)** | | | | | | | |
| 133 | **(d)**  (ozonide) is paramagnetic  Superoxide  Stability decreases as size of (alkali metal ion) decreases | | | | | | | |
| 134 | **(d)** | | | | | | | |
| 135 | **(b)**  H acts as reducing agent | | | | | | | |
| 136 | **(d)** | | | | | | | |
| 141 | **(b)** | | | | | | | |
| 145 | **(b)** | | | | | | | |
| 147 | **(c)** | | | | | | | |
| 148 | **(a)**  double bond  single bond  between double bond and single bond | | | | | | | |
| 149 | **(a)** | | | | | | | |
| 154 | **(a)**  has maximum oxidation state of sulphur and thus cannot be further oxidized by | | | | | | | |
| 156 | **(d)**    +7 (least oxidiable) | | | | | | | |
| 160 | **(d)** | | | | | | | |
| 163 | **(d)**  is chlorite | | | | | | | |
| 164 | **(b)**  Mixture is called **aqua-regia** | | | | | | | |
| 166 | **(a)**  Acidic nature increases down the group | | | | | | | |
| 167 | **(c)** | | | | | | | |
| 169 | **(a,b,d)**  has extremely low viscosity and readily form films only a few hundred atom thick, which flow without friction | | | | | | | |
| 171 | **(a,b,d)**  Complete hydrolysis of gives | | | | | | | |
| 174 | **(a,b,d)**  Concentrated sulphuric acid is hygroscopic oxidising agent and sulphonating agent. It is not an efflorescent | | | | | | | |
| 176 | **(a,c,d)**  Pyrophosphorus acid is diabasic acid as it contains two bonds, strongly reducing in nature due to the presence of two groups and contains one bond | | | | | | | |
| 179 | **(a,d)**  is linear hybridisation) and is square planar hybridisation) | | | | | | | |
| 181 | **(b,d)**  Both involve hybridization of the central sulphur atom. Both CO and involves -hybridisation and are linear | | | | | | | |
| 182 | **(a,b,d)**  White phosphorus has tetrahedral structure in which each P atom lies at the corners of the regular tetrahedron. These are six single bonds, four lone pairs of electrons and bond angle of | | | | | | | |
| 183 | **(a,b,d)**  Paramagnetic molecule with two unpaired electrons in antibonding -orbital  Diamagnetic molecule  Paramagnetic with two unpaired electrons  , electrons removes from antibonding orbital, thus bond length decreases | | | | | | | |
| 187 | **(b,c,d)**  Fractional evaporation of liquid argon under reduced pressure gives neon, krypton and xenon | | | | | | | |
| 197 | **(a,c,d)**  In an electric discharge tube containing helium, can’t be present because it has a bond order zero and does not exist | | | | | | | |
| 198 | **(a)**  Catenation means the tendency of an element to from chains of identical atoms which is pronounced in sulphur among chalcogens. | | | | | | | |
| 199 | **(d)**  Van der Waals’ forces or London forces are inversely proportional to the ionisation potential of the atoms | | | | | | | |
| 200 | **(b)**  is trigonal bipyramidal containing hybridised P atom in liquid and gaseous state. Whereas, in solid state it consists of tetrahedral cation and octahedral anions | | | | | | | |
| 201 | **(c)**  Helium is a noble gas but beryllium is a member of alkaline earth metal. Thus, beryllium is chemically active and helium is inactive | | | | | | | |
| 202 | **(a)**  bond is weaker than bond hence, is more acidic than | | | | | | | |
| 203 | **(a)**  The compound of oxygen and fluorine is more electronegative than oxygen fluorides as fluorine is more electronegative than oxygen | | | | | | | |
| 204 | **(b)**  White P exists as discrete tetrahedral molecule having P-P-P bound angle Hence, molecule is under strain and more reactive while red P exits as tetrahedral joined together through covalent bounds giving polymeric structure. | | | | | | | |
| 205 | **(a)**  Zero point energy of helium is so high that it outweighs the weak interatomic forces which are not strong enough to bind the helium atoms into the crystalline state | | | | | | | |
| 206 | **(c)**  Red phosphorus is less volatile than white phosphorus because it exists in linked tetrahedral structures. | | | | | | | |
| 207 | **(a)**  In Ga, 10-d electrons in penultimate shell shiled the nucleus change less effectively, the outer electrons is held frimly by the nucleus. As result, the ionisation energy remains nearly the same as that of aluminium in spite of the fact that atomic size increase. | | | | | | | |
| 208 | **(d)**  All the noble gases except He, have electronic configuration in their outermost shell | | | | | | | |
| 209 | **(b)**  . Its oxidation potentials is +2.64 V | | | | | | | |
| 210 | **(a)**  Liquid ammonia has a large heat of vaporization (0.327 cal/g). It is therefore used in ice plants. | | | | | | | |
| 211 | **(b)**  Due to the ease with which it can liberate nascent oxygen, acts as a powerful oxidising agent.  Paramagnetic due to presence of two unpaired electrons  Diamagnetic molecules | | | | | | | |
| 212 | **(b)**  decomposes into and as in its structure two axial bonds are longer than other three equatorial bonds | | | | | | | |
| 213 | **(b)**  Except ammonia the boiling point generally increases down, the group due to increase inn magnitude of van der waals’ forces. Ammonia shows intermolecular hydrogen bonding hence its boiling point is higher than AsH3,but lower than SbH3. | | | | | | | |
| 220 | **(c)**  Bond angle decreases as the electronegativity of the element in decreases. It is minimum for | | | | | | | |
| 221 | **(a)**  Due to non availability of -orbitals in case of nitrogen, is not known | | | | | | | |
| 222 | **(a)** | | | | | | | |
| 223 | **(c)**  Due to small size of helium (He), it is least polarizable | | | | | | | |