**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 529**

**Time :** 26:12:00 **CHEMISTRY**

**Marks :** 1551

11.THE P-BLOCK ELEMENTS

**Single Correct Answer Type**

| 1. | Which of the following is arranged in the increasing order of enthalpy of vaporization? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 2. | The number of bonds in cyclic metaphosphoric acid is | | | | | | | |
|  | a) | Zero | b) | Two | c) | Three | d) | Four |
| 3. | Phosphorus trichloride, undergoes hydrolysis to produce an oxoacid. It has the formula | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 4. | Principal cause of ozone depletion is the | | | | | | | |
|  | a) | Presence of fluorocarbons | | | b) | Acid rain | | |
|  | c) | Photochemical smog | | | d) | Green-house effect | | |
| 5. | Following are neutral oxides except | | | | | | | |
|  | a) | NO | b) |  | c) |  | d) |  |
| 6. | Thermodynamically most stable form of carbon is | | | | | | | |
|  | a) | Graphite | b) | Diamond | c) | Ionsdaleite | d) | Chaoite |
| 7. | In making casting of metal, silicon is used as | | | | | | | |
|  | a) | Oxidizer | b) | Semiconductor | c) | Deoxidizer | d) | None of these |
| 8. | Reactivity of borazole is greater than that of benzene because | | | | | | | |
|  | a) | Borazole is polar compound | | | b) | Borazole is non-polar compound | | |
|  | c) | Borazole is electron deficient compound | | | d) | Of localized electros in it | | |
| 9. | Cold solution of barium nitrite on mixing with sulphuric acid produces | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 10. | Borax is used | | | | | | | |
|  | a) | As a flux in brazing and in silver soldering | | | b) | In making enamel | | |
|  | c) | In leather tanning | | | d) | In all given above | | |
| 11. | Which is the incorrect statement about silicones? | | | | | | | |
|  | a) | They are repeating units in silicates | | | | | | | |
|  | b) | They are synthetic polymers containing repeated units | | | | | | | |
|  | c) | They are formed by hydrolysis of | | | | | | | |
|  | d) | All the above are incorrect statements | | | | | | | |
| 12. | can be used as | | | | | | | |
|  | a) | Reducing agent | | | b) | Oxidizing agent | | |
|  | c) | Catalyst in Friedel Crafts reaction | | | d) | A base | | |
| 13. | In aqueous solution disproportionates to | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 14. | - multiple bonds occur between | | | | | | | |
|  | a) | C and C | b) | C and O | c) | C and N | d) | In all cases |
| 15. | Thermite welding uses because of | | | | | | | |
|  | a) | Its low melting point | | | b) | Its lightness | | |
|  | c) | Its greater affinity for oxygen | | | d) | All the properties given above | | |
| 16. | behaves as a | | | | | | | |
|  | a) | Lewis acid and lone pair from the Lewis base is filled into empty orbital | | | | | | | |
|  | b) | Lewis base and lone pair on B is donated to empty orbital of the Lewis acid | | | | | | | |
|  | c) | Amphoteric species due to interaction with acid and base both | | | | | | | |
|  | d) | Polymer substance | | | | | | | |
| 17. | The structural formula of hypophosphorus acid is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 18. | Nitrites in water may react with amines under acidic conditions in the stomach to | | | | | | | |
|  | a) | Give carcinogenic compounds | | | b) | Given proteins | | |
|  | c) | Keep stomach acidity free | | | d) | Produce free amino acids | | |
| 19. | is heated in a test tube. Vapours are brought in contact with red litmus paper, which changes to blue and then to red. It is because of | | | | | | | |
|  | a) | Formation of and | | | b) | Formation of and | | |
|  | c) | Greater diffusion of than | | | d) | Greater diffusion of than | | |
| 20. | In changes to | | | | | | | |
|  | a) |  | b) |  | c) | and | d) | and |
| 21. | Among the VA (15) group elements one of them forms a compound sold under the name ‘**Pearl White**’. The element used is | | | | | | | |
|  | a) | N | b) | P | c) |  | d) | Bi |
| 22. | The best oxidizing agent of the following oxides is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 23. | In which of the following the angle between the two covalent bond is maximum? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 24. | Stability of hydrides of carbon family is in order | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 25. | A substance which gives an yellow precipitate when boiled with an excess of nitric acid and ammonium molybdate, ad red precipitate with is | | | | | | | |
|  | a) | Orthophosphate | b) | Pyrophosphate | c) | Metaphosphate | d) | Hypophosphate |
| 26. | on hydrolysis will produce | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 27. | Light-emitting diodes (LED), laser-diodes and memory chips of computers are made of | | | | | | | |
|  | a) | Gallium | b) | Aluminium | c) | Arsenic | d) | Gallium-arsenide |
| 28. | Silicon is an important constituent of | | | | | | | |
|  | a) | Rocks | b) | Amalgams | c) | Chlorophyll | d) | Haemoglobin |
| 29. | Which of the following halides is least stable and doubtful existence? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 30. | Which reaction takes place during respiration? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 31. | Dry ice is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 32. | Common name of phosgene is | | | | | | | |
|  | a) | Carbon tetrachloride | | | b) | Phosphoryl chloride | | |
|  | c) | Carbonyl chloride | | | d) | Phosphorus trichloride | | |
| 33. | Aqueous solution of borax reacts with 2 moles of acids. This is because of | | | | | | | |
|  | a) | Formation of 2 moles of only | | | | | | | |
|  | b) | Formation of 2 moles of only | | | | | | | |
|  | c) | Formation of 1 mole each of and | | | | | | | |
|  | d) | Formation of 2 moles each of and of which only reacts with acid | | | | | | | |
| 34. | Sindoor is represented by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 35. | Which of the following statements are true for zeolites?  1. They are formed by the replacement of some of the silicon atoms of the lattice, by say, aluminium  2. They have a more closed structure than feldspar  3. They can absorb and  4. They can separate straight chain hydrocarbons from a mixture containing both straight, chain and branched chain hydrocarbons | | | | | | | |
|  | a) | 1, 2 and 3 are correct | b) | 1, 3 and 4 are correct | c) | 1, 2 and 4 are correct | d) | 2, 3 and 4 are correct |
| 36. | The structure of is | | | | | | | |
|  | a) | Tetrahedral | b) | Pyramidal | c) | Planar triangular | d) | -shaped |
| 37. | For the hydrides of nitrogen family going down the group | | | | | | | |
|  | a) | Stability decreases | | | b) | Reducing activity increases | | |
|  | c) | Bond angle HMH decreases | | | d) | All the above variations followed | | |
| 38. | Gas that strikes in thundering of light is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 39. | is added to to | | | | | | | |
|  | a) | Improve the electrical conductivity of the cell | | | b) | Increases rate of production | | |
|  | c) | Increase the melting point | | | d) | Decrease the electrical conductivity | | |
| 40. | The thermal disproportionation of gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 41. | Borazine is converted into disubstituted product . Number of isomers of would be | | | | | | | |
|  | a) | 2 | | | b) | 4 | | |
|  | c) | 6 | | | d) | No isomer, exists as single product | | |
| 42. | Select the incorrect statement | | | | | | | |
|  | a) | Mixture of and on heating gives gas | | | | | | | |
|  | b) | is used as refrigerating fluid and as propellant in aerosols | | | | | | | |
|  | c) | Phosphine is formed when react with | | | | | | | |
|  | d) | Phosphine dissolves in water forming | | | | | | | |
| 43. | - multiple bonding between nitrogen atoms is present in | | | | | | | |
|  | a) | Hyponitrous acid | b) | Nitrous acid | c) | Nitric acid | d) | In all of these |
| 44. | Radius of is less than that of because of | | | | | | | |
|  | a) | Lanthanoid contraction | | | b) | Greater screening effect | | |
|  | c) | Inert pair effect | | | d) | None of these | | |
| 45. | The oxide which is not a reducing agent is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 46. | can’t be obtained by | | | | | | | |
|  | a) | Heating of or | | | | | | | |
|  | b) | Heating of or | | | | | | | |
|  | c) | Heating of with | | | | | | | |
|  | d) | Reaction of or or with | | | | | | | |
| 47. | Which of the following is false statement? | | | | | | | |
|  | a) | is a Lewis acid | | | b) | All the distance in diborane are equal | | |
|  | c) | Boranes are easily hydrolysed | | | d) | reduces to borane | | |
| 48. | Litharge is chemically | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 49. | Select the incorrect statement about | | | | | | | |
|  | a) | It self ionizes as | | | | | | | |
|  | b) | Substance containing is said to be acid and that containing is said to be base | | | | | | | |
|  | c) | is paramagnetic | | | | | | | |
|  | d) | dimerises to with disappearance in paramagnetism | | | | | | | |
| 50. | The crystal structures of both chaoite and carbon (VI) are based on | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 51. | Which reactions can be used to prepare diborane?  I. (in ether)  II.  III. | | | | | | | |
|  | a) | I, III | b) | I, II | c) | II, III | d) | I, II and III |
| 52. | Beryllium and aluminium have similar properties because | | | | | | | |
|  | a) | They belong t same group | | | b) | They have different electronegativity | | |
|  | c) | They have same electronegativity | | | d) | They have same ionization energy | | |
| 53. | Which of the following has the highest first ionization energy? | | | | | | | |
|  | a) | Lithium | b) | Beryllium | c) | Boron | d) | Carbon |
| 54. | Which of the following are used as transition materials and light-emitting devices (LED)?  I. Gallium-phosphides  II. Indium-phosphides  III. Gallium-arsenides  IV. Indium-arsenides | | | | | | | |
|  | a) | All | b) | Except I all | c) | Except I, II all | d) | Only IV |
| 55. | Boron carbide is used | | | | | | | |
|  | a) | In nuclear reactor to absorb neutrons | | | b) | As an abrasive | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 56. | Acid rain may cause | | | | | | | |
|  | a) | Rusting easier | | | b) | Stone-cancer in Taj Mahal | | |
|  | c) | Non-fertility of soil | | | d) | All of the above | | |
| 57. | ‘Anhydrone’ is a very effective desiccant (water absorber) used in ‘dry batteries.’ It is | | | | | | | |
|  | a) | Conc. | b) |  | c) |  | d) |  |
| 58. | Mixture of and can be separated by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 59. | Select the correct statements(s) | | | | | | | |
|  | a) | Cyanamide ion is isoelectronic with and has the same linear structure | | | | | | | |
|  | b) | reacts with water to form propyne | | | | | | | |
|  | c) | has type of lattice | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 60. | About 2 to 5% of gypsum is added to Portland cement. It is just to | | | | | | | |
|  | a) | Increase the setting rate of the cement during hydration | | | | | | | |
|  | b) | Slow down the setting rate to increase strength | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 61. | Which is/are used as ligand in complexes? | | | | | | | |
|  | a) |  | b) | CO | c) | Both (a) and (b) | d) | None of these |
| 62. | reacts with forming nitrate and oxide which are | | | | | | | |
|  | a) | from, and remains unreacted | | | | | | | |
|  | b) | from, and remains unreacted | | | | | | | |
|  | c) | from, and remains unreacted | | | | | | | |
|  | d) | remains insoluble in | | | | | | | |
| 63. | From all the following can be prepared except | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 64. | Unstable lead compounds are | | | | | | | |
|  | a) | and | b) | and | c) | and | d) |  |
| 65. | The variation in element-element bond energy follows the order | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) |  | | | | | | | |
| 66. | Indium is used | | | | | | | |
|  | a) | To dope crystals to make -- transistors | | | b) | In thermistors | | |
|  | c) | In low melting point solder | | | d) | All the above are correct | | |
| 67. | Stable oxides of carbon are | | | | | | | |
|  | a) | CO, | b) |  | c) |  | d) |  |
| 68. | A person working with phosphorus suffers from a disease in which bones decay. It is known as | | | | | | | |
|  | a) | Arthrities | b) | Phossy jaw | c) | Rickets | d) | Cancer |
| 69. | In liquid | | | | | | | |
|  | a) | is an acid | | | b) | is a base | | |
|  | c) | behaves as strong acid | | | d) | All of the above facts are true | | |
| 70. | Red lead used us primer for iron to prevent it from rusting is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 71. | Which is insoluble in excess of ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 72. | Which is the most spontaneous in forward side? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 73. | The gas evolved by heating potassium ferrocyanide crystals with conc. is | | | | | | | |
|  | a) | CO | b) |  | c) |  | d) |  |
| 74. | on hydrolysis will produce | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 75. | Chooses the correct statements | | | | | | | |
|  | a) | Superphosphate is | | | b) | Triple superphosphate is | | |
|  | c) | Both (a) and (b) are correct | | | d) | None of the above is correct | | |
| 76. | CO behaves as | | | | | | | |
|  | a) | Lewis acid | b) | Lewis base | c) | Amphoteric oxide | d) | None of these |
| 77. | is not obtained when following is heated | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 78. | Which of the following is the false statement? | | | | | | | |
|  | a) | Reducing action of and are specific | | | b) | reduces alkene to primary alcohol | | |
|  | c) | Both (a) and (b) are the false statements | | | d) | None of the above is false statement | | |
| 79. | fumes in moist air because it | | | | | | | |
|  | a) | Is covalent | | | | | | | |
|  | b) | Is volatile | | | | | | | |
|  | c) | Is hygroscopic | | | | | | | |
|  | d) | Forms in moist air | | | | | | | |
| 80. | White lead is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 81. | The colour of blue glass is due to the presence of oxide of | | | | | | | |
|  | a) | Chromium | b) | Cobalt | c) | Gold | d) | silver |
| 82. | Which gas cannot be collected over water? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 83. | Artificial gem used for cutting glass is | | | | | | | |
|  | a) | Graphite | b) | Diamond | c) |  | d) |  |
| 84. | gas is passed or heated Mg and B. Products formed are | | | | | | | |
|  | a) |  | | | b) | and | | |
|  | c) |  | | | d) | No reaction | | |
| 85. | Element  Element belonging to group 13 can be | | | | | | | |
|  | a) | B or | b) | or | c) | or or B | d) | or B |
| 86. | reduces to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 87. | Select the incorrect statement(s) | | | | | | | |
|  | a) | Interstitial carbides are formed by metalloids like Si and B | | | | | | | |
|  | b) | Covalent carbides are formed by metalloids | | | | | | | |
|  | c) | CO and both are fatal due to complex formation with present in blood | | | | | | | |
|  | d) | is called carborundum | | | | | | | |
| 88. | Carbon monoxide is a poisonous gas, the antidote used for this poisoning is | | | | | | | |
|  | a) | Pure oxygen | b) | Carbonic acid | c) | Carborundum | d) | Carbogen |
| 89. | Solid crystalline has structure which of the following? | | | | | | | |
|  | a) | Bi-pyramidal moieties | | | b) | Octahedral and tetrahedral ions | | |
|  | c) | Square-pyramidal moieties | | | d) | Pentagonal moieties | | |
| 90. | Out of and which forms stable ionic compounds in divalent state? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 91. | B can be obtained from halide by van Arkel method. This involves reaction | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 92. | In diamond crystal each carbon atom is linked with carbon atoms. The number of carbon atoms linked is | | | | | | | |
|  | a) | 2 | b) | 4 | c) | 3 | d) | 1 |
| 93. | Select the correct statements | | | | | | | |
|  | a) | Hydrides of B and Si are volatile and catches fire on exposure to air | | | | | | | |
|  | b) | Oxide of B and are acidic in nature | | | | | | | |
|  | c) | Borates and silicates have tetrahedral and structural units | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 94. | Thallium and lead are classified as chemically soft because | | | | | | | |
|  | a) | They have higher affinities for soft anions as and ions | | | | | | | |
|  | b) | They are soft in reactivity | | | | | | | |
|  | c) | They are stable in lower oxidation state | | | | | | | |
|  | d) | They are stable in higher oxidation state | | | | | | | |
| 95. | Select the incorrect statement about hydrides of group 15 elements | | | | | | | |
|  | a) | The central atom in the hydride is hydridised | | | | | | | |
|  | b) | readily form salts with salts are formed with under anhydrous condition | | | | | | | |
|  | c) | The tetrahedron is distorted due to repulsion between the lone pair of electrons and the bond pairs | | | | | | | |
|  | d) | The bond energy of the bond decreases from to because of increase in the size of the element | | | | | | | |
| 96. | Alzheimer’s disease is caused due to interaction with internal organs of the body if food is contaminated with . This disease | | | | | | | |
|  | a) | Induces senility in young persons | | | b) | Causes memory loss | | |
|  | c) | Both (a) and (b) are correct | | | d) | None of the above is correct | | |
| 97. | Which among the following statements is false regarding glass? | | | | | | | |
|  | a) | It absorbs ultra-violet light | | | | | | | |
|  | b) | It consists of silicates of sodium and alkali | | | | | | | |
|  | c) | HF causes marking on glass | | | | | | | |
|  | d) | All the halogen acids (HF, and HI) are stored in glass bottles | | | | | | | |
| 98. | Silicones are | | | | | | | |
|  | a) | Synthetic polymers containing repeated units | | | | | | | |
|  | b) | Silicates with common units | | | | | | | |
|  | c) | Ketones with silyl group similar to alkyl | | | | | | | |
|  | d) | Zircon (neso silicates) | | | | | | | |
| 99. | Addition of sodium carbonate to a solution of an oxide in water produces . This experiment indicates that | | | | | | | |
|  | a) | The oxide is that of a non-metal | | | b) | The oxide is basic | | |
|  | c) | The oxide is amphoteric | | | d) | The oxide is neutral | | |
| 100. | The minerals having silicate chains are collectively called | | | | | | | |
|  | a) | Olivine | b) | Zircon | c) | Pyroxenes | d) | Natrolite |
| 101. | Consider the reaction,  The green precipitate is also known as | | | | | | | |
|  | a) | Pair’s green | b) | Scheele’s green | c) | Verdigrl’s green | d) | Rinmann’s green |
| 102. | Maximum number of covalent bonds formed by N and P respectively are | | | | | | | |
|  | a) | 3, 5 | b) | 3, 6 | c) | 4, 5 | d) | 4, 6 |
| 103. | Fusion of borane with produces | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 104. | The true statement for the acids of phosphorus. and is | | | | | | | |
|  | a) | Their acidic nature is: | | | | | | | |
|  | b) | All of them are reducing in nature | | | | | | | |
|  | c) | All of them are tribasic acids | | | | | | | |
|  | d) | The geometry of phosphorus is tetrahedral in all the three | | | | | | | |
| 105. | Buckminster fullerene is | | | | | | | |
|  | a) | Pure graphite | b) | C-60 | c) | Diamond | d) | C-90 |
| 106. | oxidises to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 107. | An example of an “” acid is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 108. | What is the role of phosphate ion in a detergent? | | | | | | | |
|  | a) | It reduces pH of the water | | | | | | | |
|  | b) | It increase pH of the water | | | | | | | |
|  | c) | It removes and ions from water that causes hardness | | | | | | | |
|  | d) | It increases its solubility in water | | | | | | | |
| 109. | Select the correct statement about stability of cations | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) | All the above are correct statement | | |
| 110. | upon hydrolysis gives | | | | | | | |
|  | a) | Monobasic acid and dibasic acid | | | b) | Monobasic acid and tribasic acid | | |
|  | c) | Monbasic acid and a salt | | | d) | Dibasic acid and tribasic acid | | |
| 111. | A gaseous substance dissolves in water giving a pale blue solution which decolourises and oxidizes to . Gaseous substance is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 112. | In | | | | | | | |
|  | a) | All the bonds are single covalents in nature | | | | | | | |
|  | b) | Boron-fluorine bond has some double bond character and this bond is delocalized | | | | | | | |
|  | c) | Bond energy and bond length of bond indicate its single bond character | | | | | | | |
|  | d) | All the bonds are ionic | | | | | | | |
| 113. | Quartz is a crystalline variety of | | | | | | | |
|  | a) | Silicon carbide | b) | Sodium silicate | c) | Silica | d) | Silicon |
| 114. | Select the correct statements | | | | | | | |
|  | a) | Hydrides of B and Si are volatile and catch fire on exposure to air | | | | | | | |
|  | b) | Oxides of B and and ) are acidic in nature | | | | | | | |
|  | c) | Borates and silicates have tetrahedral and structural units | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 115. | Calgon (sodium metaphosphate) finds application as | | | | | | | |
|  | a) | Artificial jewel | b) | Paint | c) | A resin | d) | Washing powder |
| 116. | Bonding present between the carbon atoms in graphite is | | | | | | | |
|  | a) | Metallic | b) | Ionic | c) | Covalent | d) | Van der Waals’ forces |
| 117. | Dipole moment of CO is very small (0.1 D) (inspite of the larger difference in electronegativity) between C and O) and negative end of the dipole lies near the less electronegative C-atom. It is due to | | | | | | | |
|  | a) | Occupation of anti-bonding molecular orbitals | | | | | | | |
|  | b) | Occupation of empty -orbitals | | | | | | | |
|  | c) | Occupation of lone-pairs | | | | | | | |
|  | d) | Occupation of the lone pairs as well as empty -orbitals | | | | | | | |
| 118. | The correct structural representation of diborane is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 119. | Select the correct statement(s) | | | | | | | |
|  | a) | Red oxide is called litharge | | | b) | Yellow oxide is called massicot | | |
|  | c) | Both (a) and (b) are correct | | | d) | None of the above is correct | | |
| 120. | Consider the following reactions,  I:  II:  III:  In this, possible reactions are | | | | | | | |
|  | a) | I, III | b) | II, III | c) | I, II | d) | I, II, III |
| 121. | How can this reaction is made to proceed in forward direction? | | | | | | | |
|  | a) | Addition of -1,2-diol | | | b) | Addition of borax | | |
|  | c) | Addition of -1,2-diol | | | d) | Addition of | | |
| 122. | Which of the following dibasic acids shows geometrical isomerism? | | | | | | | |
|  | a) | Hyponitrous acid | | | b) | Maleic acid | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 123. | In the reaction, is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 124. | Molecule(s) possessing three-centre-two electron bonds and three-centre-four electron bonds would include | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | alone |
| 125. |  | | | | | | | |
|  | a) | Can be formed by passing over Hg at low pressure in an electric discharge | | | | | | | |
|  | b) | Can exist on non-eclipsed and planar structure | | | | | | | |
|  | c) | Decomposes at low temperature | | | | | | | |
|  | d) | Can show all the facts given above | | | | | | | |
| 126. | 1 mole each of and will neutralize moles of moles of and mole of (assuming all as strong electrolytes). are in the ratio of | | | | | | | |
|  | a) | 3:1.5:1 | b) | 1:2:3 | c) | 3:2:1 | d) | 1:1:1 |
| 127. | Which silicon compound is used as lubricant? | | | | | | | |
|  | a) | Asbestos | b) | Silicones | c) | Zeolite | d) | Mica |
| 128. | On heating lead nitrate the product formed is | | | | | | | |
|  | a) | NO | b) |  | c) |  | d) |  |
| 129. | In which cases geometry of the molecule is pyramidal? | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 130. | On hydrolysis, gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 131. | Stabilities of adducts formed with boron-halides is in order | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 132. | On photochemical decomposition of the products formed are | | | | | | | |
|  | a) | NO and | b) | and | c) | and | d) | and |
| 133. | The solubility of in strong solution is best explained by the formation of | | | | | | | |
|  | a) | ion | | | b) | Double salt | | |
|  | c) | A peptised colloidal sol | | | d) | A complex hydroxyl aluminate ion | | |
| 134. | Which one of the following is not a green house gas? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 135. | Boric acid is the trivial name for | | | | | | | |
|  | a) | Orthoboric acid | b) | Metaboric acid | c) | Pyroboric acid | d) | None of these |
| 136. | Boric acid is a weak acid. Thus, it behaves as | | | | | | | |
|  | a) | Proton donor as in | | | | | | | |
|  | b) | An hydroxyl acceptor as in | | | | | | | |
|  | c) | Proton acceptor as in | | | | | | | |
|  | d) | An electron donor as in | | | | | | | |
| 137. | The reaction of with leads selectively to . The is | | | | | | | |
|  | a) | Dry | | | b) | A mixture of and | | |
|  | c) | Moist | | | d) | in the presence of aqueous | | |
| 138. | On passing into aqueous solution containing | | | | | | | |
|  | a) | is formed | | | b) | is precipitated | | |
|  | c) | is formed | | | d) | Colloidal | | |
| 139. | Glass is best described as a | | | | | | | |
|  | a) | Solid | b) | Liquid | c) | Super cooled liquid | d) | Colloidal sol |
| 140. | Phosgene can be obtained when | | | | | | | |
|  | a) | White phosphorus react with alkali | | | b) | Calcium phosphide reacts with water | | |
|  | c) | Chloroform reacts with air | | | d) | Bone comes in contact with water | | |
| 141. | Boron does not form cation easily. It is due to | | | | | | | |
|  | a) | Energy required to form ion is for more than that which would be compensated by lattice energies or hydration energies of such ion | | | | | | | |
|  | b) | Boron is non-metal | | | | | | | |
|  | c) | Boron is semiconductor | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 142. | Which of the following has the regular tetrahedral structure? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 143. | All of the following are bases except | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 144. | In which case geometrical isomerism is not exhibited? | | | | | | | |
|  | a) | Hyponitrous acid | b) | 2-butene | c) | 1-butene | d) | 2-pentene |
| 145. | is used in the following but not | | | | | | | |
|  | a) | As a coagulant and precipitant in treating drinking water and sewage | | | | | | | |
|  | b) | In paper industry | | | | | | | |
|  | c) | As a mordant in dyeing | | | | | | | |
|  | d) | In plastic industry | | | | | | | |
| 146. | Consider the following statements  I. In diamond, each carbon atom is linked tetrahedrally to four other carbon atoms by bonds  II. Graphite has planar hexagonal layers of carbon atoms held together by weak van der Waals’ forces  III. Silicon exists only in diamond structure due to its tendency to form - bonds to itself  In this | | | | | | | |
|  | a) | Only I and II are correct | | | b) | Only I is correct | | |
|  | c) | Only II and III are correct | | | d) | All the above are correct statements | | |
| 147. | Select the correct statement() about group 13 (IIIA) elements | | | | | | | |
|  | a) | Stability of hydrides decreases as we move down the group | | | | | | | |
|  | b) | is a strong Lewis acid | | | | | | | |
|  | c) | exists in aqueous solution | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 148. | Diamagnetic species can be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 149. | Which one of the following acid possesses oxidizing reducing and complex forming properties? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 150. | is | | | | | | | |
|  | a) | Monobasic and weak Lewis acid | | | b) | Monobasic and weak Bronsted acid | | |
|  | c) | Monobasic and strong Lewis acid | | | d) | Tribasic and weak Bronsted acid | | |
| 151. | Repeated use of which one of the following fertilizers would increase the acidity of the soil? | | | | | | | |
|  | a) | Urea | | | b) | Superphosphate of lime | | |
|  | c) | Ammonium sulphate | | | d) | Potassium nitrate | | |
| 152. | Non-oxide ceramics can be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 153. | Carbogen is | | | | | | | |
|  | a) | Mixture of | | | b) | Mixture of | | |
|  | c) | Pure form of carbon | | | d) | Unsaturated organic compound | | |
| 154. | Lead pencil contains | | | | | | | |
|  | a) | Lead | | | b) | Graphite | | |
|  | c) | Alloy of lead and tin | | | d) | Alloy of lead and graphite | | |
| 155. | - multiple bonding is present in | | | | | | | |
|  | a) | Oxides of nitrogen | | | b) | Oxides f phosphorus | | |
|  | c) | Halides of nitrogen | | | d) | Halides of phosphorus | | |
| 156. | When orthoboric acid is heated to red heat the residue is | | | | | | | |
|  | a) | Boron | b) | Boric oxide | c) | Metaboric acid | d) | Pyroboric acid |
| 157. | Stability of pentahalides is in order | | | | | | | |
|  | a) | for given | | | b) | for given element | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 158. | reacts with to produce | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 159. | - bonding is shown in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 160. | Glacial phosphoric acid is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 161. | Paramagnetic species are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 162. | Anodizing can be done by electrolyzing dilute with as anode. This results in | | | | | | | |
|  | a) | The formation of protective oxide layer | | | | | | | |
|  | b) | The formation of and gas | | | | | | | |
|  | c) | The formation of and gas | | | | | | | |
|  | d) | The formation of and gas | | | | | | | |
| 163. | is most negative when is | | | | | | | |
|  | a) | N | b) | P | c) | As | d) |  |
| 164. | The solid exists as | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | and |
| 165. | Marsh gas primarily contains | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 166. | Lead is soluble in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 167. | oxidises to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 168. | Following metals are soluble in aqua-regia | | | | | | | |
|  | a) | Pt | b) | Au | c) | Ag | d) | All of these |
| 169. | General formula of aluminium alums is is monovalent cation) | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 170. | Select the incorrect statements | | | | | | | |
|  | a) | has all bond equal | | | | | | | |
|  | b) | is colourless solid and is polymeric containing bridges | | | | | | | |
|  | c) | is ionic compound | | | | | | | |
|  | d) | have low melting point, are covalent and have the halogen-bridged dimeric structurea | | | | | | | |
| 171. | Bond angle of is found in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 172. | The dipole moments of the given molecules are such that | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 173. | The relative stability of the different oxidation state  Is an example of | | | | | | | |
|  | a) | Redox potential | b) | disproportionation | c) | Inert pair effect | d) | Electron-affinity |
| 174. | Method used for obtaining highly pure silicon, used as a semiconductor material, is | | | | | | | |
|  | a) | Oxidation | b) | Electrochemical | c) | Crystallisation | d) | Zone refining |
| 175. | Nitrogen is obtained by the thermal decomposition of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 176. | How can this reaction is made to proceed in forward direction? | | | | | | | |
|  | a) | Addition of -1, 2-diol | | | b) | Addition of borax | | |
|  | c) | Addition of -1, 2-diol | | | d) | Addition of | | |
| 177. | Consider the following statements for diborane  1. Boron is approximately hybridized  2. angle is  3. There are two terminal bonds for each boron atom  4. There are only 12 bonding electron available | | | | | | | |
|  | a) | 1, 2 and 4 are correct | b) | 1, 2 and 3 are correct | c) | 2, 3 and 4 are correct | d) | 1, 3 and 4 are correct |
| 178. | Which of the following is the ionic carbide? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 179. | Polyphosphates are used as water softening agents because they | | | | | | | |
|  | a) | Form soluble complexes with anionic species | | | | | | | |
|  | b) | Precipitate anionic species | | | | | | | |
|  | c) | Form soluble complexes with cationic species | | | | | | | |
|  | d) | Precipitate cationic species | | | | | | | |
| 180. | Compound undergoes hydrolysis to produce a colourless gas with rotten fish smell. The gas gives a vortex ring. The gas is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 181. | Nitrogen differs from P, As, and Bi in the following properties | | | | | | | |
|  | a) | It forms diatomic molecule | | | | | | | |
|  | b) | It is not able to extent its coordination number beyond four | | | | | | | |
|  | c) | Nitrogen does not function as a Lewis acid whereas P, As, and Bi do so | | | | | | | |
|  | d) | In all the properties given above | | | | | | | |
| 182. | Extraction of metal from the ore cassiterite involves | | | | | | | |
|  | a) | Carbon reduction of an oxide ore | | | b) | Self-reduction of a sulphide ore | | |
|  | c) | Removal of copper impurity | | | d) | Removal of iron impurity | | |
| 183. | (laughing gas) finds use in the following except | | | | | | | |
|  | a) | As a propellant for whipped ice-cream | | | b) | As an anaesthetic | | |
|  | c) | For the preparation of | | | d) | As fuel for rockets | | |
| 184. | Which one of the following statements about the zeolite is false? | | | | | | | |
|  | a) | They are used as cation exchangers | | | | | | | |
|  | b) | They have open structure which enables them to take up small molecules | | | | | | | |
|  | c) | Zeolites are aluminosilicats having three dimensional network | | | | | | | |
|  | d) | Some of the units are replaced by and ions in zeolites | | | | | | | |
| 185. | Which is/are true statements? | | | | | | | |
|  | a) | Diamond is unaffected by conc acids but graphite reacts with hot conc. forming mellitic acid, | | | | | | | |
|  | b) | is toxic because it forms a complex with haemoglobin in the blood | | | | | | | |
|  | c) | carbon suboxide, is a foul-smelling gas | | | | | | | |
|  | d) | All the above are true statements | | | | | | | |
| 186. | Which of the following statements are true? | | | | | | | |
|  | a) | Cold and very dilute forms with Zn or | | | | | | | |
|  | b) | Concentrated forms with | | | | | | | |
|  | c) | Cold and more concentrated forms with Cu | | | | | | | |
|  | d) | All the above are correct | | | | | | | |
| 187. | In plants, atmospheric nitrogen is converted into | | | | | | | |
|  | a) | Carbohydrate | b) | Proteins | c) | Amino acids | d) | Fats |
| 188. | Silicon reacts with hot solution of forming | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 189. | Metallic tin and conc. reacts to form | | | | | | | |
|  | a) | Metastannic acid | b) | Stannic nitrate | c) | Stannous nitrite | d) | Stannous nitrate |
| 190. | Sulphide mineral +  can be | | | | | | | |
|  | a) | Mg, Ag, Au | b) | Ag, Au | c) | Pt, Au | d) | Pt, Ag |
| 191. | The solution of sodium meta aluminate on boiling with ammonium chloride gives a white precipitate of | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 192. | is soluble in | | | | | | | |
|  | a) | Dil. | b) |  | c) | Hot water | d) | Dil. |
| 193. | At room temperature the solid compound is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 194. | Carborundum is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 195. | Which are acid salts? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 196. | The dipole moments of the given molecules are such that | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 197. | Thermal stability of boron compounds is in order | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) |  | | | | | | | |
| 198. | in water behaves as | | | | | | | |
|  | a) | Weak dibasic acid | | | b) | Weak monobasic acid | | |
|  | c) | Weak diacid base | | | d) | Weak monoacid base | | |
| 199. | Among these ores the highest phosphorus content is in | | | | | | | |
|  | a) | Chlorapatite | b) | Phosphorite | c) | Fluorspar | d) | Equal |
| 200. | and are | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) | None of the above is correct | | |
| 201. | Nitric oxide is formed by the reaction of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 202. | Extra pure can be obtained by heating | | | | | | | |
|  | a) | and | b) |  | c) |  | d) |  |
| 203. | White arsenic has the chemical composition | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 204. | In the above reaction replaces one of the H-atoms in . This H is of | | | | | | | |
|  | a) | C (in ) | b) | C (in ) | c) | O (in ) | d) | Any of and |
| 205. | The percentage of -character in the orbitals forming bonds on is | | | | | | | |
|  | a) | 25 | b) | 33 | c) | 50 | d) | 75 |
| 206. | In the above reaction the product is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 207. | Most abundant uncombined element present in atmosphere is | | | | | | | |
|  | a) | Ca | b) | Mg | c) | Al | d) | N |
| 208. | When reacts with sulphuric acid sulphuryl chloride is formed as the final product. This shows that sulphuric acid | | | | | | | |
|  | a) | Has two hydroxyl groups in its structure | | | b) | Is a derivative of sulphur dioxide | | |
|  | c) | Is a dibasic acid | | | d) | Has greater affinity for water | | |
| 209. | Aqueous solution liberates with . This shows that is | | | | | | | |
|  | a) | An acidic oxide | b) | A basic oxide | c) | An amphoteric oxide | d) | A Lewis acid |
| 210. | Which of the following cuts ultraviolet rays? | | | | | | | |
|  | a) | Soda glass | b) | Crooke’s glass | c) | Pyrex | d) | None of these |
| 211. | Pure is prepared in the laboratory by heating a mixture of | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 212. | Graphite is a good conductor of heat and electricity because it contains | | | | | | | |
|  | a) | Layers of carbon atoms | | | b) | Sheet like structure | | |
|  | c) | Free electrons | | | d) | - bonding | | |
| 213. | When boron is fused with , products formed are | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 214. | The silicate anion in the mineral kinoite is a chain of three tetrahedra that share corners with adjacent tetrahedral. The mineral also contains ions, ions, and water molecules in a 1:1:1 ratio. The mineral is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 215. | Compound used on thermal insulator is | | | | | | | |
|  | a) | Silica gel | b) | Zeolites | c) | Silicones | d) | Asbestos |
| 216. | Arsenic drugs are mainly used for the treatment of | | | | | | | |
|  | a) | Cholera | b) | Typhoid | c) | Jaundice | d) | Syphilis |
| 217. | Which is used as a rocket fuel? | | | | | | | |
|  | a) |  | b) | Polybudiene | c) | Both (a) and (b) | d) | None of these |
| 218. | Formula of the following silicate anion is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 219. | Which of the following phosphorus is the most reactive? | | | | | | | |
|  | a) | Red phosphorus | b) | White phosphorus | c) | Scarlet phosphorus | d) | Violet phosphorus |
| 220. | The borax bead test can be used to detect the presence of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 221. | With , a neutral solution of orthophosphate gives an yellow precipitate insoluble in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 222. | on hydrolysis forms | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 223. | Which of the following statements about is not correct? | | | | | | | |
|  | a) | It is strong tribasic acid | | | | | | | |
|  | b) | It is prepared by acidifying an aqueous solution of borax | | | | | | | |
|  | c) | It has a layer structure in which planar units are joined by hydrogen bonds | | | | | | | |
|  | d) | It does not act as a Lewis acid by accepting hydroxyl ion | | | | | | | |
| 224. | Which of the following oxides of nitrogen is solid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 225. | When zeolite is treated with hard water, there is exchange reaction between calcium/magnesium ion/and…. | | | | | | | |
|  | a) | Aluminium ion | b) | Sodium ion | c) | Water of hydration | d) | Sulphate ion |
| 226. | Which of the following shows electrical conduction? | | | | | | | |
|  | a) | Potassium ion | b) | Graphite | c) | Diamond | d) | Sodium ion |
| 227. | Laughing gas is prepared by heating | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 228. | By passing air over red hot coke the gas obtained is | | | | | | | |
|  | a) | Coal gas | b) | Water gas | c) | Oil gas | d) | Producer gas |
| 229. | Which is least basic? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 230. | The decrease stability of higher oxidation state in -block with increasing atomic number is due to | | | | | | | |
|  | a) | Decrease in bond energy as going down the group | | | | | | | |
|  | b) | Energy required to unpair electrons is not compensalted by the energy released in forming the two additional bonds | | | | | | | |
|  | c) | Both of the above | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 231. | Substances burn more readily in than in air because | | | | | | | |
|  | a) | Is reactive at high temperature | | | | | | | |
|  | b) | Dissociates to give that supports combustion | | | | | | | |
|  | c) | The activation energy is increased on increasing temperature | | | | | | | |
|  | d) | Acts as a catalyst | | | | | | | |
| 232. | in pure state is colourless but it is often of yellow colour. It is due to | | | | | | | |
|  | a) | Unstable structure of which immediately changes to | | | | | | | |
|  | b) | Photochemical decomposition in presence of sunlight | | | | | | | |
|  | c) | Interaction of atmospheric gases with | | | | | | | |
|  | d) | Conversion of | | | | | | | |
| 233. | Both and are covalent but they differ in the extent of hydrolysis because | | | | | | | |
|  | a) | is more stable than and hydrolysis product of , does not exist | | | | | | | |
|  | b) | Dipole moment of is greater than that of | | | | | | | |
|  | c) | Electronegativity of F is greater than that of | | | | | | | |
|  | d) | can expand it octet by using -orbitals | | | | | | | |
| 234. | A certain compound on burning in air forms three oxides. One of the oxides turned lime water milky, the other turned anhydrous blue and third formed a solution of . Compound is formed of | | | | | | | |
|  | a) | S, N and H | b) | S, N and C | c) | S, C and H | d) | S, H and Na |
| 235. | Which is silane? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 236. | Which one of the following bonds has the highest bond energy? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 237. | The electronegativities of N, C, Si and P are such that | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 238. | A colourless salt gives a white ppt (soluble in ammonium acetate) and a brown coloured pungent gas on reaction with conc. . Salt is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 239. | Which of the following species have undistorted octahedral structures?  1.  *Select the correct answer using the code below* | | | | | | | |
|  | a) | 2, 3 and 4 | b) | 1, 3 and 4 | c) | 1, 2 and 3 | d) | 1, 2 and 4 |
| 240. | Which of the following compounds has the greatest ionic character? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 241. | Water glass is | | | | | | | |
|  | a) | Glass made up of water | | | b) | Sodium silicate | | |
|  | c) | Water gas | | | d) | Crystal carbonate | | |
| 242. | With excess of ammonia forms | | | | | | | |
|  | a) | Ammonium chloride | b) | Nitrogen trichloride | c) | Nitrosyl chloride | d) | Nitrogen |
| 243. | Compound used in safety matches is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 244. | Which of the following statement regarding boric acid is false? | | | | | | | |
|  | a) | It acts as a monobasic acid | | | b) | It is soluble in hot water | | |
|  | c) | It has a planar structure | | | d) | It acts as a tribasic acid | | |
| 245. | Borax is actually | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 246. | Pentavalent phosphorus is more stable compared to that of nitrogen even through they belong to same group; it is due to | | | | | | | |
|  | a) | More reactivity of phosphorus | | | b) | Inert nature of nitrogen | | |
|  | c) | Presence of -orbital | | | d) | Large size of phosphorus atom | | |
| 247. | is not obtained when following is heated | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 248. | Amphoteric oxides are | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 249. | Orthoboric acid behaves as weak monobasic acid giving and | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 250. | Soda free glass fibre are made of | | | | | | | |
|  | a) | and | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 251. | Select the correct statement(s) about | | | | | | | |
|  | a) | It has triangular units | | | | | | | |
|  | b) | In solid states, molecules are hydrogen bonded | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above statements is correct | | | | | | | |
| 252. | Which gas is used in aerated water? | | | | | | | |
|  | a) |  | b) |  | c) | CO | d) | Water vapours |
| 253. | Red and white phosphorus will differ but not in | | | | | | | |
|  | a) | Smell | | | b) | Solubility in | | |
|  | c) | Exhibiting phosphorescence | | | d) | Reactions with | | |
| 254. | Which of the following have the highest melting points? | | | | | | | |
|  | a) | -block elements | | | b) | -block elements | | |
|  | c) | -block elements | | | d) | All have equal melting points | | |
| 255. | Green house effect is due to | | | | | | | |
|  | a) | Disturbance of the earth’s delicate thermal balance | | | | | | | |
|  | b) | Absorption of heat radiation by atmospheric gases particularly water vapours | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 256. | In | | | | | | | |
|  | a) | There is direct boron-boron bond | | | | | | | |
|  | b) | The bonds are ionic | | | | | | | |
|  | c) | It is isostructural to | | | | | | | |
|  | d) | Boron atoms are linked through hydrogen bridges | | | | | | | |
| 257. | Borax is converted into B by steps  Borax  I and II reagents are | | | | | | | |
|  | a) | Acid, | b) | Acid, C | c) | Acid, Fe | d) | Acid, Mg |
| 258. | Ambidentate ligands are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 259. | In (tetrahedral) | | | | | | | |
|  | a) | Each P is joined to four P | | | b) | Each P is joined to three P | | |
|  | c) | Each P is joined to two P | | | d) | does not exist | | |
| 260. | Carbon and silicon belong to group 14. What is the nature of carbide of silicon? | | | | | | | |
|  | a) | Covalent | b) | Ionic | c) | Interstitial | d) | None of these |
| 261. | is known as | | | | | | | |
|  | a) | Aluminium dioxo ion | b) | Meta aluminate ion | c) | Dioxo aluminium ion | d) | Aluminium oxide ion |
| 262. | Major minerals containing nitrogen are | | | | | | | |
|  | a) | DNA | b) |  | c) |  | d) | All of these |
| 263. | Which of the following is/are paramagnetic? | | | | | | | |
|  | a) | Only | b) |  | c) |  | d) | All are paramagnetic |
| 264. | Which of the following compounds is/are possible? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 265. | Which involves breaking of covalent bonds? | | | | | | | |
|  | a) | Boiling of | b) | Melting of | c) | Melting of | d) | Boiling of |
| 266. | Which of the following is most acidic? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 267. | Select the correct statement(s) | | | | | | | |
|  | a) | Si, uses all of its valence electrons in an -hybridisation and crystallizes in an fcc structure similar to diamond | | | | | | | |
|  | b) | Diamond is an electrical insulator, graphite is an electrical conductor but silicon is a semiconductor | | | | | | | |
|  | c) | Most common silica is quartz | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 268. | In graphite, additional electrons are | | | | | | | |
|  | a) | Localized on each C-atom | | | | | | | |
|  | b) | Localized on every third C-atom | | | | | | | |
|  | c) | Present in anti-bonding orbital | | | | | | | |
|  | d) | Delocalized forming extended -bonding system | | | | | | | |
| 269. | Water softener is | | | | | | | |
|  | a) | Borax | b) | Zeolite | c) | Both (a) and (b) | d) | None of these |
| 270. | Name of the structure of silicates in which three oxygen atoms of are shared is | | | | | | | |
|  | a) | Pyrosilicate | | | b) | Sheet silicate | | |
|  | c) | Linear chain silicate | | | d) | Three dimensional silicate | | |
| 271. | of (alum) can be replaced by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 272. | The substance used as a fast drying agent in the laboratory is | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) | Charcoal | | | d) | Anhydrous calcium chloride | | |
| 273. | Standard reduction electrode potential of lead suggests that it is reactive metal but it appears more noble (unreactive). It is due to | | | | | | | |
|  | a) | Surface coating of oxide | | | b) | High over potential of reduction of to | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 274. | An alloy of boron and aluminium is allowed to react with . Products formed are | | | | | | | |
|  | a) | and | | | b) | and | | |
|  | c) | and | | | d) | and | | |
| 275. | Which of the following has the highest calorific value? | | | | | | | |
|  | a) | Water gas | b) | Producer gas | c) | Carbonium oxide | d) | Coal gas |
| 276. | When chlorine is passed through molten tin, the product obtained is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 277. | When vapours of are passed over hot Mg, then the product formed is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 278. | Borax is used as a buffer since | | | | | | | |
|  | a) | Its aqueous solution contains equal amount of weak acid and its salt | | | | | | | |
|  | b) | It is easily available | | | | | | | |
|  | c) | Its aqueous solution contains equal amount of strong acid and its salt | | | | | | | |
|  | d) | Statement that borax is a buffer, is wrong | | | | | | | |
| 279. | Aqueous solution of the following are matched according to their properties shown. Select the correct matching | | | | | | | |
|  | a) | acidic | | | b) | white fumes | | |
|  | c) | amphoteric | | | d) | All of the above are correct matching | | |
| 280. | The wrong statement about is | | | | | | | |
|  | a) | It is nitrous oxide | | | b) | It is least reactive oxide of nitrogen | | |
|  | c) | It is not a linear molecule | | | d) | It is known as laughing gas | | |
| 281. | The dipole moment of is less than that of because | | | | | | | |
|  | a) | F is more reactive than H | | | | | | | |
|  | b) | forms associated molecules | | | | | | | |
|  | c) | The resultant of the individual bond polarities is less | | | | | | | |
|  | d) | The resultant of the individual bond polarities is opposed by the polarity of lone pair | | | | | | | |
| 282. | Consider the following boron halides  1. 2. 3. 4.  The Lewis acid characters of these halides are such that | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 283. | Concentrations of the atmospheric have been rising becaue of | | | | | | | |
|  | a) | Use of fossil fuels | b) | Acid rain | c) | Photochemical smog | d) | Ozone depletion |
| 284. | Carbon and silicon belong to (IV) group. The maximum coordination of carbon is commonly occurring compounds is 4, whereas that of silicon is 6. This is due to | | | | | | | |
|  | a) | Large size of silicon | | | b) | More electropositive nature of silicon | | |
|  | c) | Availability of -orbital in silicon | | | d) | Both (a) and (b) | | |
| 285. | is formed when | | | | | | | |
|  | a) | Moist Fe reacts with NO | | | b) | reacts with conc. in presence of | | |
|  | c) | Cold dil. reacts with and Zn | | | d) | By all the reactions | | |
| 286. | Hot conc. converts graphite into | | | | | | | |
|  | a) | Graphite oxide | | | b) | Benzene hexacarboxylic acid | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 287. | One of the acid listed below is formed only from the rest area formed from . Acid formed from is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 288. | Most probable oxidation state of and will be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 289. | Calcium cyanamide on treatment with steam produces | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 290. | Pure boron is best prepared by | | | | | | | |
|  | a) | Heating with | | | | | | | |
|  | b) | Heating with Na or K | | | | | | | |
|  | c) | Heating with Na or K | | | | | | | |
|  | d) | Heating with in the presence of a catalyst | | | | | | | |
| 291. | While testing , there is green-edged flame on heating the salt with conc. and . Green colour is of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 292. | The compound having maximum carbon percentage is | | | | | | | |
|  | a) | Peat | b) | Bituminous | c) | Lignite | d) | Anthracite |
| 293. | The statement true for is | | | | | | | |
|  | a) | It has non-linear structure | | | | | | | |
|  | b) | It is called pseudohalogen | | | | | | | |
|  | c) | The formal oxidation state of nitrogen in this anion is +1 | | | | | | | |
|  | d) | It is isoelectronic with | | | | | | | |
| 294. | Which blue-liquid is obtained on reacting equimolar amounts of two gases at ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 295. | Which is a set of acid salts and can react with base? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) | All of the above | | |
| 296. | Hardening of cement is due to | | | | | | | |
|  | a) | Dehydration | | | b) | Hydrolysis | | |
|  | c) | Hydration and hydrolysis | | | d) | Polymerization | | |
| 297. | is | | | | | | | |
|  | a) | Monobasic acid and weak Lewis acid | | | b) | Monobasic and weak Bronsted acid | | |
|  | c) | Monobasic and strong Lewis acid | | | d) | Tribasic and weak Bronsted acid | | |
| 298. | Boron nitride has the structure of the type | | | | | | | |
|  | a) | Both diamond and graphite | | | b) | Graphite | | |
|  | c) | Diamond | | | d) |  | | |
| 299. | This salt of oxoacids of phosphorus is used as washing detergent | | | | | | | |
|  | a) | Wavellite | b) | Microcosmic salt | c) | Calgon | d) | Chlorapatite |
| 300. | Alums are used as mordant in dyeing because | | | | | | | |
|  | a) | Dye is adsorbed on which is deposited on fibre in the hydrolysis process | | | | | | | |
|  | b) | Dye is adsorbed on formed due to hydrolysis | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 301. | Out of and | | | | | | | |
|  | a) | and are acidic, is amphoteric and is an oxidizing agent | | | | | | | |
|  | b) | is converted to on reaction with | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 302. | Of the following acids  I: hypo phosphorous acid  II: hydrofluoric acid  III: oxalic acid  IV: glycine | | | | | | | |
|  | a) | I, II are monobasic: III dibasic acid and IV amphoteric | | | | | | | |
|  | b) | II monobasic: I, III dibasic acid: IV amphoteric | | | | | | | |
|  | c) | I monobasic, II, III dibasic, IV amphoteric | | | | | | | |
|  | d) | I, II, III dibasic: IV amphoteric | | | | | | | |
| 303. | Which of the following has the highest first ionization energy? | | | | | | | |
|  | a) | Lithium | b) | Beryllium | c) | Boron | d) | Carbon |
| 304. | Essential constituents of plants and animal tissues are | | | | | | | |
|  | a) | N and P | b) | N and As | c) | Cu and Mg | d) | Ca and Mg |
| 305. | and do not differ in | | | | | | | |
|  | a) | Oxidation number | b) | Basicity | c) | Melting point | d) | Structure |
| 306. | Percentage of lead in lead pencil is | | | | | | | |
|  | a) | 30 | b) | 20 | c) | 10 | d) | Zero |
| 307. | Holme’s signals can be given by using | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 308. | Arsenic drugs are mainly used for the treatment of | | | | | | | |
|  | a) | Cholera | b) | Typhoid | c) | Jaundice | d) | Syphilis |
| 309. | Glass having higher refractive index is prepared using | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 310. | The incorrect statement is | | | | | | | |
|  | a) | Anhydrous is a covalent substance | | | | | | | |
|  | b) | Ionic compounds generally have low melting point and boiling point | | | | | | | |
|  | c) | A molecule shows a more stable forms as compound to individual atom | | | | | | | |
|  | d) | is a non-polar solvent | | | | | | | |
| 311. | Which of the following is not an acid anhydride? | | | | | | | |
|  | a) |  | b) | CO | c) |  | d) |  |
| 312. | Light elements and Si are | | | | | | | |
|  | a) | Oxophiles (high affinity for oxygen) | | | b) | Fluorophiles (high affinity for fluorine) | | |
|  | c) | Both type | | | d) | None of the types given | | |
| 313. | Which is/are used as an anaesthetic? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 314. | The element which forms oxides in all oxidation states to +5 is | | | | | | | |
|  | a) | N | b) | P | c) | As | d) |  |
| 315. | The bond angle in is greater than that in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 316. | Select the correct statement(s) | | | | | | | |
|  | a) | Aluminium dissolves in dilute minereal acids but is made passive by concentrated nitric acid | | | | | | | |
|  | b) | Aluminium vessel can be used as storage of | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 317. | Dimer formation can take place with | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 318. | is a trimer of . Number of bonds in is | | | | | | | |
|  | a) | Three | b) | Two | c) | One | d) | Zero |
| 319. | Nitration of aromatic compounds is done using a mixture of conc. and conc. . Intermediate formed in the nitration process is | | | | | | | |
|  | a) | (nitronium ion) | | | | | | | |
|  | b) | (nitrate ion) | | | | | | | |
|  | c) | (nitrosonium ion) | | | | | | | |
|  | d) | (nitrite ion) | | | | | | | |
| 320. | In which case hydrolysis is faster | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) | At equal rate | | | d) | No hydrolysis | | |
| 321. | Anion containing both three-and four-coordinated boron is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 322. | Hydrazine is not | | | | | | | |
|  | a) | A reducing agent | b) | An oxidizing agent | c) | An acid | d) | A base |
| 323. | can’t be stored in | | | | | | | |
|  | a) | Al vessel | b) | Zn vessel | c) | Both (a) and (b) | d) | None of these |
| 324. | Which of the following compounds do not exist? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 325. | Which forms - multiple bonds with itself and with C and O? | | | | | | | |
|  | a) | P, As | b) | N, As | c) | N, P | d) | N |
| 326. | The high reactivity and low volatility of white phosphorus is due to | | | | | | | |
|  | a) | Tetrahedrally arranged units | | | b) | Bond angle of | | |
|  | c) | Weak van der Waals’ force of attraction | | | d) | Increased steric (strain) factor | | |
| 327. | Lead as impurity in the extraction of silver is removed by | | | | | | | |
|  | a) | Parke’s process | b) | Solvay process | c) | Cyanide process | d) | None of these |
| 328. | Boron sesquioxide is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 329. | Diborane is a Lewis acid forming addition compound with , a Lewis base. This | | | | | | | |
|  | a) | Is ionic and exists as and ions | | | | | | | |
|  | b) | On heating is converted into borazine, (called inorganic benzene) | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 330. | When a mixture of carbon monoxide and chlorine is exposed to sunlight the product formed is | | | | | | | |
|  | a) | Thionyl chloride | b) | Phosgene | c) | Phosphine | d) | Carbon tetrachloride |
| 331. | Nitric oxide is paramagnetic in | | | | | | | |
|  | a) | Gaseous state | b) | Liquid state | c) | Solid state | d) | Polymeric state |
| 332. | Nitrosonium ion is isoelectronic with | | | | | | | |
|  | a) | Carbon dioxide | b) | Carbon monoxide | c) | Nitrogen dioxide | d) | Nitric oxide |
| 333. | Select the incorrect statement | | | | | | | |
|  | a) | Mellitic acid is benzene hexa-carboxylic acid | | | | | | | |
|  | b) | dissolves in conc. forming | | | | | | | |
|  | c) | dissolves in hot forming | | | | | | | |
|  | d) | Diamond is unreactive but graphite forms with | | | | | | | |
| 334. | Concentrated nitric acid, upon long standing turns yellow-brown due to the formation of | | | | | | | |
|  | a) | NO | b) |  | c) |  | d) |  |
| 335. | The sides of safety matches contain | | | | | | | |
|  | a) | Red phosphorus + sand powder | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) | glass pieces | | | | | | | |
|  | d) | sulphur + antimony | | | | | | | |
| 336. | Alum is found to contain hydrated monovalent cation , trivalent cation and in the ratio of | | | | | | | |
|  | a) | 1:1:1 | b) | 1:2:3 | c) | 1:3:2 | d) | 1:1:2 |
| 337. | and are used as food additives and generally added to meat to | | | | | | | |
|  | a) | Retard oxidation of meat to brown coloured material | | | | | | | |
|  | b) | Prevent growth of botulism bacteria | | | | | | | |
|  | c) | Impart red colour to oxidized meat by NO by reaction of heme in blood | | | | | | | |
|  | d) | Make all of the functions given above effective | | | | | | | |
| 338. | Select the correct statements | | | | | | | |
|  | a) | Catenation is maximum is carbon | | | | | | | |
|  | b) | Carbon has pronounced ability to form - multiple bonds to itself and to other elements like O and N | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 339. | Global warming is called | | | | | | | |
|  | a) | Photochemical smog | b) | Green-house effect | c) | Acid rain | d) | Respiration |
| 340. | Select the correct statement | | | | | | | |
|  | a) | Oxides of carbon family are all network solids with octahedral coordination | | | | | | | |
|  | b) | Silicon dioxide (silica) is a network solid with tetrahedral coordination and is a giant molecule | | | | | | | |
|  | c) | and are all acidic oxides | | | | | | | |
|  | d) | None of the above appears correct | | | | | | | |
| 341. | Element of group 14 used in semiconductors are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 342. | Which of the following oxides of nitrogen is paramagnetic? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 343. | Which is/are correct statements about and ? | | | | | | | |
|  | a) | Both form oxyacids and respectively | | | | | | | |
|  | b) | In each P is joined to four O and in each P is joined to six O atoms | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 344. | The major constituent in cement is | | | | | | | |
|  | a) | Silica | b) | Magnesium oxide | c) | Calcium carbonate | d) | Iron oxide |
| 345. | In the preparation of red phosphorus from white phosphorus | | | | | | | |
|  | a) | is used as a catalyst | | | | | | | |
|  | b) | The white phosphorus is treated in an electric furnace | | | | | | | |
|  | c) | A little iodine is used as catalyst | | | | | | | |
|  | d) | The gas is released | | | | | | | |
| 346. | Methanides are | | | | | | | |
|  | a) | and | | | b) | and | | |
|  | c) | and | | | d) | and | | |
| 347. | The type of hybridization of boron in diborane is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 348. | Graphite is a soft solid lubricant extremely difficult to melt. The reason for this anomalous behaviour is that graphite | | | | | | | |
|  | a) | Is a non-crystalline substance | | | | | | | |
|  | b) | Is an allotropic form of diamond | | | | | | | |
|  | c) | Has molecules of variable molecular masses like polymers | | | | | | | |
|  | d) | Has carbon atoms arranged in large plates of rings of strongly bound carbon atoms with weak interplate bonds | | | | | | | |
| 349. | Name of structure of silicates in which three oxygen atoms of are shared is | | | | | | | |
|  | a) | Pyrosilicate | | | b) | Sheet silicate | | |
|  | c) | Linear chain silicate | | | d) | Three dimensional silicate | | |
| 350. | Among the following, the paramagnetic compound is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |

**Multiple Correct Answers Type**

| 351. | Conc. reacts with carbon forming | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 352. | Nylon-6 is formed from caprolactam which is formed from | | | | | | | |
|  | a) | Cyclohexanone and hydroxyl amine | | | b) | Cyclohexanone and hydrazine | | |
|  | c) | Benzophenon and hydrazine | | | d) | Benzophenone and hydroxylamine | | |
| 353. | Select the correct statement(s) | | | | | | | |
|  | a) | forms adducts withand | | | | | | | |
|  | b) | forms adducts with and | | | | | | | |
|  | c) | reacts with liquid and ethanol forming and | | | | | | | |
|  | d) | and ions can be made only in non-aqueous media | | | | | | | |
| 354. | Select the correct statement(s) | | | | | | | |
|  | a) | Diborane is an electron-deficient compound | | | | | | | |
|  | b) | Diborane is stoichiometrically analogous to ethane | | | | | | | |
|  | c) | Total electrons involved in bonding are 12 in diborane and ethane | | | | | | | |
|  | d) | Total electrons involved in bonding are 12 in diborane and 14 in ethane | | | | | | | |
| 355. | Group 14 (carbon family) elements have the following properties | | | | | | | |
|  | a) | They are all network solids with octahedral network | | | | | | | |
|  | b) | Only is a network solid with tetrahedral coordination and is a giant molecule | | | | | | | |
|  | c) | and are amphoteric oxides | | | | | | | |
|  | d) | All oxides are acidic | | | | | | | |
| 356. | Select the correct statement(s) | | | | | | | |
|  | a) | fumes strongly in moist air and is partially hydrolysed by excess of water | | | | | | | |
|  | b) | is converted into the adducts and with small amounts of water at low temperature | | | | | | | |
|  | c) | is a weak acid but is a very strong acid | | | | | | | |
|  | d) | is sparingly soluble in water | | | | | | | |
| 357. | Boric acid is a weak Lewis acid proton comes from | | | | | | | |
|  | a) | By its ionization | | | b) | When it forms complex with | | |
|  | c) | When it forms borate esters with alcohol | | | d) | All of the above | | |
| 358. | The nitrogen oxide(s) that contain(s) bond(s) is (are) | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 359. | exists in the form/s is | | | | | | | |
|  | a) | Cristobalite | b) | Tridymite | c) | Quartz | d) | None of these |
| 360. | Select the correct statement(s) | | | | | | | |
|  | a) | Aluminium monohalides are formed by the reactions of the trihalides with aluminium at 1300K followed by rapid cooling | | | | | | | |
|  | b) | Aluminium monochloride (red) is formed when aluminium reacts with at 1200 K | | | | | | | |
|  | c) | Aluminium monohalides disproportionate at room temperature | | | | | | | |
|  | d) | exists as and is diamagnetic and has crystalline structure | | | | | | | |
| 361. | Select the correct statement(s) | | | | | | | |
|  | a) | Boron trimethyl is a weaker Lewis acid than the boron trihalides or monborane | | | | | | | |
|  | b) | Lewis acid property when is a donor is in order: | | | | | | | |
|  | c) | Lewis and property when is a donor is in order: | | | | | | | |
|  | d) | Lewis acid property when CO is a donor: no adduct is formed with halides and Lewis acid property of | | | | | | | |
| 362. | Select ionic carbides | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 363. | is hydrolysed but is not hydrolysed because | | | | | | | |
|  | a) | Si has vacant -orbital and can accommodate lone-pair of electrons from oxygen of water | | | | | | | |
|  | b) | Si has relatively large size and can increase its coordination number from four to five | | | | | | | |
|  | c) | Si has relatively smaller size and thus interaction with is spontaneous | | | | | | | |
|  | d) | Si has oxidation number of six while carbon has oxidation number of four in all its compounds | | | | | | | |
| 364. | Correct statement(s) out of the following is | | | | | | | |
|  | a) | has pyramidal structure | | | b) | shows planar arrangement | | |
|  | c) | is highly volatile | | | d) | is called silane | | |
| 365. | +3 oxidation state is more characteristics in case of | | | | | | | |
|  | a) | B | b) |  | c) |  | d) | Al |
| 366. | Silly putty | | | | | | | |
|  | a) | Is a silicone polymer | | | | | | | |
|  | b) | Has a composition intermediate between silicone oils and silicone rubbers | | | | | | | |
|  | c) | Is an asbestos | | | | | | | |
|  | d) | Is not related to any chemical | | | | | | | |
| 367. | Silicones | | | | | | | |
|  | a) | Are synthetic polymer containing repeating units | | | | | | | |
|  | b) | Are formed by hydrolysis of | | | | | | | |
|  | c) | Are natural occurring repeating units | | | | | | | |
|  | d) | Single unit | | | | | | | |
| 368. | Carbon suboxide is formed when | | | | | | | |
|  | a) | Carbon reacts with conc. | | | b) | Malonic acid reacts with | | |
|  | c) | Carbon reacts with strong alkali solution | | | d) | Oxalic acid is heated strongly | | |
| 369. | Select the correct statement(s) | | | | | | | |
|  | a) | In graphite, only three electrons (out of four) are involved in bondin | | | | | | | |
|  | b) | -bonding electrons in graphite are delocalized over the whole structure | | | | | | | |
|  | c) | Conduction of electricity in graphite is due to mobile electrons | | | | | | | |
|  | d) | Diamond is insulator due to absence of mobile electrons | | | | | | | |
| 370. | Select the correct statement(s) | | | | | | | |
|  | a) | is hydrolysed to orange soluble in dil. | | | | | | | |
|  | b) | is hydrolysed to white soluble in dil. | | | | | | | |
|  | c) | can change to and with no change in hybridization of P | | | | | | | |
|  | d) | and are stable compounds | | | | | | | |
| 371. | Thermodynamic tendency of to react with would be favoured by | | | | | | | |
|  | a) | Low bond energy | | | b) | High electron affinity of | | |
|  | c) | High lattice energy of | | | d) | High electronegativity of P | | |
| 372. | Heating of oxalic acid with evolves | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 373. | The following side reaction in the production of | | | | | | | |
|  | a) | Is catalysed by traces of heavy metals as | | | | | | | |
|  | b) | Is suppressed by addition of gelatin or glue | | | | | | | |
|  | c) | Is made reversible by removing | | | | | | | |
|  | d) | Is made reversible by adding | | | | | | | |
| 374. | The great thermal and chemical stability of silicones is attributed to high strength of | | | | | | | |
|  | a) | Silicon-carbon bond | b) | Silicon-oxygen bond | c) | Silicon-silicon bond | d) | Carbon-carbon bond |
| 375. | Select the statement(s) | | | | | | | |
|  | a) | The enthalpy difference between - and - graphite is very large and thus two forms are not interconvertible | | | | | | | |
|  | b) | The enthalpy difference between - and -graphite is very small and two forms are interconvertible | | | | | | | |
|  | c) | -graphite changes to -graphite at about 1300 K | | | | | | | |
|  | d) | -graphite changes to -graphite at about 1300 K | | | | | | | |
| 376. | Actual source of protons in boric acid is based on the following | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) | In neutral or basic solution | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) | All of the above | | | | | | | |
| 377. | reduces | | | | | | | |
|  | a) | To | | | | | | | |
|  | b) | With as an intermediate indicated by violet colour in layer | | | | | | | |
|  | c) | Indicated by blue colour with starch | | | | | | | |
|  | d) | To | | | | | | | |
| 378. |  | | | | | | | |
|  | a) | Is an endothermic compound | | | | | | | |
|  | b) | Burns in air with evolution of heat in an exothermic compound | | | | | | | |
|  | c) | Is kinetically stable | | | | | | | |
|  | d) | Reduces to in acidic medium | | | | | | | |
| 379. | Select the correct statement(s) | | | | | | | |
|  | a) | is called phosphine gas | | | | | | | |
|  | b) | (carbon suboxide) has hybridised carbons | | | | | | | |
|  | c) | is toxic because it forms a complex with haemoglobin in the blood | | | | | | | |
|  | d) | Diamond is unaffected by concentrated acid but graphite is oxidized to mellitic acid with concentrated | | | | | | | |
| 380. | Select the correct statement(s) | | | | | | | |
|  | a) | A saturated solution of boric acid in water is neutral to the indicator bromocresol green | | | | | | | |
|  | b) | is insoluble in anhydrous HF | | | | | | | |
|  | c) | Aqueous solution of is basic to the indicator bromocresol green | | | | | | | |
|  | d) | Aqueous solution of boric acid and potassium hydrogen difluoride is alkaline to bromocresol indicator | | | | | | | |
| 381. | Which of the following statements is/are correct? | | | | | | | |
|  | a) | CO is good reducing agent | | | b) | CO has the structure CO | | |
|  | c) | Water gas is equimolar mixture of CO and | | | d) | Coal gas is a mixture of CO, | | |
| 382. | and show central atoms | | | | | | | |
|  | a) | Hybridisation of central atoms | | | b) | Oxidizing nature | | |
|  | c) | Reducing nature | | | d) | Molar mass | | |
| 383. | Which fumes in moist air? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 384. | In acidic medium | | | | | | | |
|  | a) | Is oxidized to | | | b) | Loses four electrons | | |
|  | c) | Has equivalent mass 8 | | | d) | Reduces to | | |
| 385. | Select the correct statement(s) | | | | | | | |
|  | a) | In -graphite, the layers are arranged in the sequence | | | | | | | |
|  | b) | In -graphite, the layers are arranged in the sequence ….. | | | | | | | |
|  | c) | In -graphite, the layers are arranged in the sequence | | | | | | | |
|  | d) | In -graphite, the layers are arranged in the sequence | | | | | | | |
| 386. | Gases responsible for “green-house effect” are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 387. | Select the correct statement(s) | | | | | | | |
|  | a) | Graphite is composed of planar, two dimensional sheets of hybridised carbon atoms | | | | | | | |
|  | b) | Each sheet is a network of fused, hexagonal rings of carbons | | | | | | | |
|  | c) | The layers in graphite are held together by relatively weak van der Waals’ forces of attraction | | | | | | | |
|  | d) | Graphite is thermodynamically the most stable allotropic form of carbon | | | | | | | |
| 388. | Select the correct statement(s)  forms and isomer with | | | | | | | |
|  | a) | Benzaldehyde | b) | Acetone | c) | Acetaldehyde | d) | Benzophenone |
| 389. | can be used as | | | | | | | |
|  | a) | An oxidizing agent | | | | | | | |
|  | b) | A reducing agent | | | | | | | |
|  | c) | A autioxidant in photographic developers | | | | | | | |
|  | d) | Oxime forming reagent (with carbonyl compound) | | | | | | | |
| 390. | Consider the following statements  I: Boric acid is a mild antiseptic and is used as a food preservative  II: Borax and other borates are used in water-treatment, timber preservation, glass manufacture  III: Sodium peroxoborate is an important constituent of washing powder | | | | | | | |
|  | a) | I, II | b) | II, III | c) | I, III | d) | I, II, III |
| 391. | Tin (II) chloride is used | | | | | | | |
|  | a) | As a mordant in dyeing | | | b) | As a reducing agent | | |
|  | c) | As an oxidizing agent | | | d) | In the preparation of colloidal gold | | |
| 392. | Select the correct statement(s) | | | | | | | |
|  | a) | On the basis of Lewis acidity, an oxygen atom is more effective than an fluorine atom as a -donor towards boron | | | | | | | |
|  | b) | 1, 2-diols have a strong tendency to form borate esters on account of chelate effect | | | | | | | |
|  | c) | Borate esters are stable due to chelate effect | | | | | | | |
|  | d) | None of the above is correct statement | | | | | | | |
| 393. | Select the correct alternate(s) | | | | | | | |
|  | a) | The group BN is isoelectronic with | | | | | | | |
|  | b) | No species with group is formed | | | | | | | |
|  | c) | Common form of boron nitride has an ordered layer structure closely resembling that of graphite | | | | | | | |
|  | d) | has the wurtzite structure | | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assertion - Reasoning Type** | | | |
| This section contain(s) 0 questions numbered 394 to 393. 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 | |

|  |  |  |  |
| --- | --- | --- | --- |
| 394 |  | | |
|  | **Statement 1:** | | Boranes are volatile and decompose to boron, and hydrogen at red heat |
|  | **Statement 2:** | | All the boranes react with ammonia depending on the conditions |

|  |  |  |  |
| --- | --- | --- | --- |
| 395 |  | | |
|  | **Statement 1:** | | Sibonds are weaker than Si bonds |
|  | **Statement 2:** | | Silicon forms double bonds with itself |

|  |  |  |  |
| --- | --- | --- | --- |
| 396 |  | | |
|  | **Statement 1:** | | , and PbO are more basic and ionic than the corresponding |
|  | **Statement 2:** | | is acidic while And are amphoteric |

|  |  |  |  |
| --- | --- | --- | --- |
| 397 |  | | |
|  | **Statement 1:** | | is a useful organic catalyst for Friedel crafts reactions |
|  | **Statement 2:** | | It is covalent, gaseous and hydrolysed by water |

|  |  |  |  |
| --- | --- | --- | --- |
| 398 |  | | |
|  | **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. |

|  |  |  |  |
| --- | --- | --- | --- |
| 399 |  | | |
|  | **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. |

|  |  |  |  |
| --- | --- | --- | --- |
| 400 |  | | |
|  | **Statement 1:** | | White phosphorus is stored under water. |
|  | **Statement 2:** | | White phosphorus is highly reactive and catches fire spontaneously in air. |

|  |  |  |  |
| --- | --- | --- | --- |
| 401 |  | | |
|  | **Statement 1:** | | Calcium carbide on hydrolysis gives acetylene |
|  | **Statement 2:** | | Calcium carbide contains anions |

|  |  |  |  |
| --- | --- | --- | --- |
| 402 |  | | |
|  | **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. |

|  |  |  |  |
| --- | --- | --- | --- |
| 403 |  | | |
|  | **Statement 1:** | | OF2 is named as oxygen difluoride. |
|  | **Statement 2:** | | OF2 is oxygen is less electronegative than fluorine. |

|  |  |  |  |
| --- | --- | --- | --- |
| 404 |  | | |
|  | **Statement 1:** | | Liquid NH3 is used for refrigeration. |
|  | **Statement 2:** | | Liquid NH3 does not vaporize quickly. |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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**. | | | | | | | | | |

| 405. | Match the compounds (in Column I) with their use (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Boric acid | | (1) | | In Friedel-Craft acylation | |
|  | **(B)** | Borax | | (2) | | Mild antiseptic | |
|  | **(C)** | Aluminium chloride | | (3) | | Washing powder | |
|  | **(D)** | Sodium peroxoborate | | (4) | | Buffer | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | 2 | 4 | 1 | 3 |  |  |
|  | **b)** | 4 | 3 | 2 | 1 |  |  |
|  | **c)** | 1 | 2 | 3 | 4 |  |  |
|  | **d)** | 3 | 1 | 4 | 2 |  |  |

| 406. | Match the species in Colum I with their characteristic(s) in Column II | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | Reducing agent | |
|  | **(B)** |  | | (2) | | Oxidizing agent | |
|  | **(C)** |  | | (3) | | Weak base | |
|  | **(D)** |  | | (4) | | Molecule or anion with linear strucuture | |
|  | **(E)** |  | | (5) | | Isoelectronic of | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** | **E** |  |
|  | **a)** | 1,2,3 | 1,4,5 | 1,2 | 1,3 | 1,2,4,5 |  |
|  | **b)** | 1,2 | 1,2,3 | 1,4,5 | 1,2,4,5 | 1,2,4,5 |  |
|  | **c)** | 1,2,4,5 | 1,2 | 1,3 | 1,4,5 | 1,2,4,5 |  |
|  | **d)** | 1,4,5 | 1,3 | 1,2,4,5 | 1,2 | 1,2,4,5 |  |

| 407. | Match the types of borates (in Column I) with their formula (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Metaborate | | (1) | |  | |
|  | **(B)** | Orthoborates | | (2) | |  | |
|  | **(C)** | Pyroborates | | (3) | |  | |
|  | **(D)** | Perborate | | (4) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | 4 | 2 | 1 | 3 |  |  |
|  | **b)** | 3 | 4 | 2 | 2 |  |  |
|  | **c)** | 2 | 3 | 4 | 1 |  |  |
|  | **d)** | 2 | 1 | 3 | 4 |  |  |

| 408. | Match the reactions of metals with dilute (in Column I) with the nitrogen compounds (obtained by oxidation/reduction (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | |  | |
|  | **(B)** |  | | (2) | |  | |
|  | **(C)** |  | | (3) | |  | |
|  | **(D)** |  | | (4) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | 2 | 3 | 4 | 1 |  |  |
|  | **b)** | 3 | 2 | 1 | 4 |  |  |
|  | **c)** | 4 | 1 | 3 | 2 |  |  |
|  | **d)** | 1 | 4 | 2 | 3 |  |  |

| 409. | Match the acids (in Column I) with number of acid salts formed by them (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Hypophosphorus acid | | (1) | | Two | |
|  | **(B)** | Orthophosphorus acid | | (2) | | Zero | |
|  | **(C)** | Orthophosphoric acid | | (3) | | One | |
|  | **(D)** | Mellitic acid | | (4) | | Five | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | 3 | 2 | 4 | 1 |  |  |
|  | **b)** | 1 | 4 | 3 | 2 |  |  |
|  | **c)** | 4 | 1 | 2 | 3 |  |  |
|  | **d)** | 2 | 3 | 1 | 4 |  |  |

| 410. | Match the items (in Column I) with their formula (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Tetraboric acid | | (1) | |  | |
|  | **(B)** | Borax | | (2) | |  | |
|  | **(C)** | Borazine | | (3) | |  | |
|  | **(D)** | Amphoteric | | (4) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | 2 | 1 | 3 | 4 |  |  |
|  | **b)** | 4 | 2 | 1 | 3 |  |  |
|  | **c)** | 3 | 4 | 1 | 2 |  |  |
|  | **d)** | 1 | 3 | 2 | 4 |  |  |

| 411. | Match the oxide of Column I with their corresponding property (ies) in Column II | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | Oxidation state +2 | |
|  | **(B)** |  | | (2) | | Oxidation state +4 | |
|  | **(C)** |  | | (3) | | Amphoteric | |
|  | **(D)** |  | | (4) | | Basic | |
|  | **(E)** |  | | (5) | | Acidic | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** | **E** |  |
|  | **a)** | 2,3 | 2,4 | 1,3 | 1,2,3 | 2,5 |  |
|  | **b)** | 2,4 | 1,3 | 2,3 | 2,5 | 2,5 |  |
|  | **c)** | 1,2,3 | 2,3 | 2,4 | 2,5 | 2,5 |  |
|  | **d)** | 1,3 | 1,2,3 | 2,5 | 2,4 | 2,5 |  |

| 412. | Match the compounds (in Column I) with their oxidation number of N (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | |  | |
|  | **(B)** |  | | (2) | | 3 | |
|  | **(C)** |  | | (3) | | 4 | |
|  | **(D)** |  | | (4) | | 5 | |
|  | **(E)** |  | | (5) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** | **E** |  |
|  | **a)** | 2 | 3 | 4 | 5 | 1 |  |
|  | **b)** | 5 | 1 | 2 | 3 | 1 |  |
|  | **c)** | 1 | 2 | 3 | 4 | 1 |  |
|  | **d)** | 3 | 4 | 1 | 2 | 1 |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Linked Comprehension Type**  This section contain(s) 17 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. 413 to -413** | | | | | | | | |
| Boric oxide B2O3 reacts with water to form boric acid. The net ionisation reaction of boric acid when dissolves in water isBOH3aq+2H2Ol→H3O+aq+[BOH]4- (aq)Boric acid is quite toxic and slippery. The solution of the salt are generally quite complex because they contain polymers of the borate anions as well as the simple anion[BOH]4-, BO33- and BO45-. Borates hydrolyze in water to given basic solution and this is why boran is used in some cleaning agents | | | | |

| 413. | Which of the following statements is/are correct? | | | | | | | |
|  | a) | Boric acid is Lewis base | | | | | | | |
|  | b) | Hybridisation of boron in acid is | | | | | | | |
|  | c) | Boric acid molecule held together by hydrogen bonding | | | | | | | |
|  | d) | All of the above | | | | | | | |
| **Paragraph for Question Nos. 414 to - 414** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Like halides of boron, halides of aluminium do not show back bonding because of increase in size of aluminium. Actually aluminium atoms complete their octets by forming dimers. Thus, chloride and bromide of aluminium exist as dimers, both in the vapour state and in polar. Solvents like benzene while the corresponding boron halides exists as monomer. In boron trihalides the extent of back bonding decreases with increase in size of halogens and thus, Lewis acid character increases | | | | |

| 414. | Which of the following reaction is incorrect? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| **Paragraph for Question Nos. 415 to - 415** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The tetrafluoroborate anion BF4-, is a Lewis base. The other tetrahaloborate anions, BCl4- and BBr4-, can be prepared in non-aqueous solventsBased on the above short write-up, answer the following questions | | | | |

| 415. | is | | | | | | | |
|  | a) | donor | | | b) | A lone-pair acceptor | | |
|  | c) | A lone-pair donor | | | d) | Solvated in aqueous solution | | |
| **Paragraph for Question Nos. 416 to - 416** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Certain aspects of the aqueous chemistry of aluminium compounds derive from the nature of the hydrated aluminium ion- AlH2O63+AlH2O63++H2O⇌AlH2O5OH-2++H3O+Read the above write-up and answer the following questions | | | | |

| 416. | Above equilibrium indicates that | | | | | | | |
|  | a) | is a Lowry-Bronsted acid | | | | | | | |
|  | b) | is a Lowry-Bronsted base | | | | | | | |
|  | c) | is a Lowry-Bronsted acid as well as a base | | | | | | | |
|  | d) | is neither acid nor base | | | | | | | |
| **Paragraph for Question Nos. 417 to - 417** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Diborane is an electron deficient compound stoichiometrically, it is analogous to ethane, C2H6. However, the total number of electrons involved in bonding and less in diboraneRead the above short note and answer the following question | | | | |

| 417. | Bonding electrons involved | | | | | | | |
|  | a) | In is 14 and in is 16 | | | b) | In is 12 and in is 14 | | |
|  | c) | In is 10 and in is 12 | | | d) | In is 16 and in is 18 | | |
| **Paragraph for Question Nos. 418 to - 418** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Study the following sequence of reactions: | | | | |

| 418. | is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 419 to - 420** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following discovery and answer the questions at the end“Element carbon appears in many structural forms or allotropes. Three of these forms are crystalline –diamond, graphite and the recently discovered fullerence (buckyball) – while more than 40 others, including coke and carbon black, are amorphous. Now there seems to be set a fourth crystalline allotrope of carbon, reported in 1995 by Richard in 1995 by Richard Lagow at the University of Texas” | | | | |

| 419. | Newly discovered allotrope of carbon has the form | | | | | | | |
|  | a) | Polyyne | b) | Fullerene | c) | Buckyball | d) | None of these |
| **Paragraph for Question Nos. 420 to - 421** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following short write-up and answer the questions at the end of itThe name ‘silica’ covers an entire group of minerals, which have the general formula SiO2, the most common of which is quartz. Quartz is a framework silicate with SiO4 tetrahedra arranged in spirals. The spirals can turn in a clockwise or anti-clockwise direction – a feature that results in there being two mirror images, optically active, varieties of quartz | | | | |

| 420. | The following pictures represent various silicate anions. Their formulae are respectively | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 421 to - 422** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Based on the following short report, answer the questions given at the endIn some foam-type fire extinguishers, the reactants are Al2SO43(aq) and NaHCO3(aq). When the extinguisher is activated, these reactants are allowed to mix producing AlOH3(s) and CO2(g). The AlOH3-CO2 foam extinguishes the fire | | | | |

| 421. | is formed as a result of | | | | | | | |
|  | a) | reaction between and | | | | | | | |
|  | b) | Reaction between hydrolysis product of and | | | | | | | |
|  | c) | Reaction between hydrolysis product of and | | | | | | | |
|  | d) | Direct reaction between and | | | | | | | |
| **Paragraph for Question Nos. 422 to - 423** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Question given below are based o the following technical reportThe CO2 as well as H2O absorbs strongly in the infrared region, and its presence in the atmosphere decreases the loss of heat from the earth by radiation. This global warming is called the ‘green house effect’ (other gases, including the oxides of nitrogen from car exhausts, freons from aerosols and refrigerators and methane from bacteria in the soil and in the rumen of cows, also add to the green house effect). The concentration of atmospheric CO2 has increased by 10%. This is resulting in the increase in the mean temperature of the earth by 2.5℃, varying from 2℃ at the equator to 4℃ at the poles. This could have dramatic effect on the climate | | | | |

| 422. | As a result of green house effect, there can be  A: increase in rate of evaporation of water, thus, untimely more rain, flooding, etc  B: tropical storms in certain parts of the world  C: decrease in pH of the soil  D: increase in pH of the soil  *Select the correct alternate* | | | | | | | |
|  | a) | B, C, D | b) | A, C, D | c) | A, B, D | d) | A, B, C |
| **Paragraph for Question Nos. 423 to - 424** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following write-ups and answer the questions at the end of itSilicones are synthetic polymers containing repeated R2SiO units. Since, the empirical formula is that of a ketone (R2CO), the name silicone has been given to these materials. Silicones can be made into oils, rubbery elastomers and resins. They find a variety of applications because of their chemical inertness, water repelling nature, heat-resistance and good electrical insulating propertyCommercial silicone polymers are usually methyl derivatives and to a lesser extent phenyl derivatives and are synthesized by the hydrolysis of | | | | |

| 423. | If we mix with , we get silicones of the type | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| **Paragraph for Question Nos. 424 to - 425** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Question given below is based on the following structures: | | | | |

| 424. | Structures of and and are different. It is due to the fact that | | | | | | | |
|  | a) | Silicone also uses -orbitals in multiple bonding | | | | | | | |
|  | b) | In case of , lone pair of N-atom is transferred to the empty -orbitals of silicon (- overlapping) | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| **Paragraph for Question Nos. 425 to - 426** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Consider the following scheme involving oxides and oxy-acids of nitrogen. Based on this answer the questions given at the end | | | | |

| 425. | Out of the following which reactions are disproportionatios? | | | | | | | |
|  | a) | 2, 10 | b) | 2, 3 | c) | 1, 11 | d) | 13, 14 |
| **Paragraph for Question Nos. 426 to - 427** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Questions given below are based on the following experimentAn oxyacid of phosphorus has the following propertiesComplete neutralization of the acid with sodium hydroxide solution gives an aqueous solution of sodium ion and oxy-acid anions in the ratio 2:1. When a solution of the acid is warmed with silver nitrate solution metallic silver is deposited | | | | |

| 426. | What is the structure of the oxy-acid? | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 3 | d) | 4 |
| **Paragraph for Question Nos. 427 to - 427** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The following flow diagram represents the industrial preparation of nitric acid from ammoniaAnswer the questions given below | | | | |

| 427. | Which line of entry describes the undefined reagents, products and reaction conditions? | | | | | | | |
|  | a) | Catalyst cool | | | | | | | |
|  | b) | Catalyst cool | | | | | | | |
|  | c) | Catalyst high pressure | | | | | | | |
|  | d) | High pressure catalyst | | | | | | | |
| **Paragraph for Question Nos. 428 to - 428** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N2H4 reduces IO3- to I+ in acidic mediumN2H4+IO3-+H+→N2+I++H2OAnswer the following questions | | | | |

| 428. | Equivalent mass of (molar mass = 42 g ) is | | | | | | | |
|  | a) | 42 | b) | 21 | c) | 10.5 | d) | 14 |

**Integer Answer Type**

| 429. | More than four bonds are made with how many elements in carbon family? | | | | | | | |
| 430. | In the hydrolysis of borax  products formed are to be neutralized by . Number of moles of required per mole of borax hydrolysed is……. | | | | | | | |
| 431. | A silicate mineral has three tetrahedra that share corners with adjacent tetrahedral. Mineral also contains and in 1:1:1 molar ratio. Thus, total number of atoms of Cu, Si and Ca per unit of mineral is….. | | | | | | | |
| 432. | Aluminium methanide contains …… carbon atom(s) | | | | | | | |
| 433. | Total number of B and N atom in borazine is….. | | | | | | | |
| 434. | How many of the fuel gases have CO and both as combustible gases?  LPG, water gas, Producer gas, Coal gas, CNG | | | | | | | |
| 435. | can accept …… hydroxide ion(s) from | | | | | | | |
| 436. | Out of the elements C, S, and 𝑃𝑏 and +4 oxidation state is shown by how many element(s) | | | | | | | |
| 437. | Total number of bond in is…… | | | | | | | |
| 438. | What is the total negative charge on the silicate ? | | | | | | | |
| 439. | Number of isotopes of carbon ……. | | | | | | | |
| 440. | Out of and number of diamagnetic substances are…… | | | | | | | |
| 441. | is negative for the following reaction  When …… | | | | | | | |
| 442. | Consider the following reactions    In how many reactions has been oxidized? | | | | | | | |
| 443. | Total number of atoms of carbon and oxygen in graphite oxide…… | | | | | | | |
| 444. | How many bonds are there in ? | | | | | | | |
| 445. | In how many reactions has been reduced in | | | | | | | |
| 446. | Maximum covalency of aluminium is……. | | | | | | | |
| 447. | Borax is found to have…… tetrahedral unit(s) | | | | | | | |
| 448. | Number of tribasic acid out of the following is ……. | | | | | | | |
| 449. | When malonic acid is dehydrated using at , species formed has total number of atoms …… | | | | | | | |
| 450. | How many bonds are there in ? | | | | | | | |
| 451. | Total electrons involved in all the bridging bond is….. | | | | | | | |
| 452. | is to be converted into ion. How many steps are involved? (Assume ionization in one step) | | | | | | | |
| 453. | How many species out of the following have reducing properties? | | | | | | | |
| 454. | Alum is found to contain hydrated monovalent cation, trivalent cation and sulphate in the simplest ratio where | | | | | | | |
| 455. | How many of the following oxides are basic oxides? | | | | | | | |
| 456. | at 300 K. What is ? | | | | | | | |
| 457. | Among the following the number of compounds that can react with to give is is…… | | | | | | | |
| 458. | Total electrons involved in all the terminal bonds is… | | | | | | | |
| 459. | A phosphate mineral has formula . Thus, is…… | | | | | | | |
| 460. | In , how many are inclined at with one each? | | | | | | | |
| 461. | How many of the species are isoelectronic? | | | | | | | |
| 462. | Inert pair effect is shown by how many elements? | | | | | | | |
| 463. | A membered ring is formed in where is ……. | | | | | | | |
| 464. | has terminal bonds and bridging bonds which is equal to | | | | | | | |
| 465. | In the following, equilibrium partial pressure of , and gases are 4, 1 and 2 atm respectively at 300 K. What is the value of ? | | | | | | | |
| 466. | How many of the species are paramagnetic? | | | | | | | |
| 467. | For the half-cell reaction  (in volts) are given for different metals   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Cu | Zn | Fe |  |  | | 0.34 |  |  |  |  |   How many of these metals can reduce to ? | | | | | | | |
| 468. | is to be converted into ion. How many steps are involved? | | | | | | | |
| 469. | In the oxidation of to , equivalent weight of would be….. | | | | | | | |
| 470. | of 0.05 M solution of was boiled with excess of in acidic medium. The formed required of 0.1 N in acidic medium. What is the oxidation number of the N in new product? | | | | | | | |
| 471. | is reduced to . What is change in oxidation number? | | | | | | | |
| 472. | How many elements in group 14 are used as semiconductor? | | | | | | | |
| 473. | Maximum change in oxidation number of nitrogen in | | | | | | | |
| 474. | Total number of and bonds in carbon suboxide is…… | | | | | | | |
| 475. | A mixture contains 3 moles of CO and. On passing the mixture over heated charcoal, volume increases to 5 moles. Thus, in the mixture is ….. mole(s) | | | | | | | |
| 476. | How many of the following have two and two bonds? | | | | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 529**

**Time :** 26:12:00 **CHEMISTRY**

**Marks :** 1551

11.THE P-BLOCK ELEMENTS

|  |
| --- |
| **: ANSWER KEY :** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1) d 2) c 3) b 4) a**  **5) d 6) a 7) c 8) d**  **9) a 10) d 11) a 12) a**  **13) b 14) d 15) c 16) a**  **17) a 18) a 19) c 20) c**  **21) c 22) b 23) b 24) a**  **25) a 26) b 27) d 28) a**  **29) d 30) d 31) c 32) c**  **33) d 34) d 35) b 36) c**  **37) d 38) b 39) a 40) d**  **41) b 42) a 43) a 44) b**  **45) a 46) a 47) b 48) a**  **49) c 50) a 51) d 52) c**  **53) d 54) a 55) c 56) d**  **57) d 58) c 59) d 60) b**  **61) c 62) b 63) c 64) a**  **65) a 66) d 67) c 68) b**  **69) d 70) a 71) a 72) d**  **73) a 74) c 75) c 76) b**  **77) d 78) d 79) c 80) d**  **81) b 82) d 83) c 84) b**  **85) a 86) b 87) a 88) d**  **89) b 90) a 91) b 92) b**  **93) d 94) a 95) a 96) c**  **97) d 98) a 99) a 100) c**  **101) b 102) a 103) d 104) d**  **105) b 106) b 107) b 108) d**  **109) d 110) a 111) c 112) b**  **113) c 114) d 115) d 116) c**  **117) a 118) c 119) c 120) c**  **121) a 122) c 123) d 124) d**  **125) d 126) d 127) b 128) b**  **129) a 130) a 131) a 132) b**  **133) d 134) d 135) a 136) b**  **137) b 138) b 139) c 140) c**  **141) a 142) a 143) d 144) c**  **145) d 146) d 147) d 148) d**  **149) d 150) a 151) c 152) d**  **153) b 154) b 155) a 156) b**  **157) c 158) b 159) b 160) c**  **161) a 162) a 163) a 164) d**  **165) a 166) d 167) c 168) d**  **169) a 170) a 171) d 172) c**  **173) c 174) d 175) a 176) a**  **177) d 178) c 179) c 180) a**  **181) d 182) a 183) d 184) d**  **185) d 186) d 187) b 188) d**  **189) a 190) b 191) c 192) c**  **193) b 194) d 195) c 196) c**  **197) b 198) a 199) b 200) c**  **201) b 202) d 203) d 204) c**  **205) d 206) d 207) d 208) a**  **209) a 210) b 211) c 212) c**  **213) c 214) a 215) d 216) a**  **217) c 218) b 219) b 220) c**  **221) a 222) c 223) a 224) c**  **225) a 226) b 227) a 228) d**  **229) a 230) c 231) b 232) b**  **233) a 234) d 235) c 236) a**  **237) c 238) b 239) d 240) b**  **241) b 242) b 243) a 244) d**  **245) a 246) c 247) d 248) c**  **249) c 250) a 251) c 252) a**  **253) d 254) a 255) b 256) d**  **257) d 258) d 259) b 260) a**  **261) b 262) c 263) b 264) d**  **265) b 266) a 267) d 268) d**  **269) c 270) b 271) d 272) d**  **273) c 274) c 275) d 276) a**  **277) d 278) a 279) d 280) c**  **281) d 282) c 283) d 284) c**  **285) d 286) b 287) d 288) d**  **289) c 290) b 291) b 292) d**  **293) d 294) b 295) c 296) c**  **297) a 298) b 299) c 300) a**  **301) c 302) c 303) d 304) a**  **305) a 306) d 307) b 308) d**  **309) c 310) b 311) b 312) c**  **313) d 314) a 315) d 316) a**  **317) d 318) d 319) a 320) c**  **321) d 322) c 323) c 324) b**  **325) d 326) d 327) a 328) a**  **329) c 330) b 331) a 332) b**  **333) b 334) b 335) b 336) d**  **337) d 338) c 339) b 340) b**  **341) c 342) c 343) c 344) c**  **345) c 346) d 347) c 348) d**  **349) b 350) d 1) a,b,c,d 2) a 3) a,c,d 4) a,b,d**  **5) b,c 6) a,b,c,d 7) b 8) a,b,c**  **9) a,b,c 10) a,b,c,d 11) a,b,c,d 12) a**  **13) a,b 14) a,b 15) a,c,d 16) a,b**  **17) a,b 18) b 19) a,b,c,d 20) a,b**  **21) a,b,c 22) b,d 23) a,b 24) a,b**  **25) b,d 26) a 27) a,b,c 28) a,b,c,d**  **29) c,d 30) a,b,d 31) a,d 32) a,b,c**  **33) a,b 34) a,b,c 35) a,b 36) a,b**  **37) a,b,c,d 38) a,c 39) a,b,c,d 40) d**  **41) a,b,d 42) a,b,c 43) a,b,c,d 1) b 2) c 3) d 4) b**  **5) b 6) a 7) a 8) c**  **9) a 10) a 11) a 1) a 2) a 3) b 4) a**  **5) d 6) c 7) c 8) b**  **1) c 2) d 3) c 4) c**  **5) b 6) b 7) a 8) b**  **9) b 10) d 11) a 12) c**  **13) a,c 14) b 15) a 16) c**  **1) 4 2) 2 3) 7 4) 3**  **5) 6 6) 2 7) 1 8) 1**  **9) 3 10) 6 11) 3 12) 3**  **13) 1 14) 2 15) 3 16) 2**  **17) 6 18) 6 19) 2 20) 1**  **21) 5 22) 6 23) 4 24) 3**  **25) 6 26) 4 27) 2 28) 9**  **29) 4 30) 8 31) 5 32) 3**  **33) 5 34) 5 35) 6 36) 8**  **37) 2 38) 4 39) 4 40) 3**  **41) 8 42) 1 43) 8 44) 2**  **45) 7 46) 8 47) 2 48) 3** | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 529**

**Time :** 26:12:00 **CHEMISTRY**

**Marks :** 1551

11.THE P-BLOCK ELEMENTS

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | **(d)**    Most least  volatile volatile due to  H-bonding  Electrons | | | | | | | |
| 9 | **(a)** | | | | | | | |
| 12 | **(a)** | | | | | | | |
| 13 | **(b)**    by by  reduction oxidation | | | | | | | |
| 14 | **(d)** | | | | | | | |
| 17 | **(a)**  Monobasic acid | | | | | | | |
| 20 | **(c)**  (disproportionation) | | | | | | | |
| 22 | **(b)**  Stability of hence is best oxidizing agent | | | | | | | |
| 23 | **(b)** | | | | | | | |
| 29 | **(d)**  Thus, is not formed | | | | | | | |
| 36 | **(c)**  hybridised B | | | | | | | |
| 38 | **(b)** | | | | | | | |
| 41 | **(b)**  B  N  B  N  B  N  H  H  H  H  H  H  B  N  B  N  B  N  H  H  *X*  *X*  H  H  *X*  b  o  r  a  z  i  n  e  (  *A*  )  B  N  B  N  B  N  H  *X*  H  *X*  H  H  B  N  B  N  B  N  *X*  H  *X*  H  H  H  B  N  B  N  B  N  H  *X*  H  H  *X*  H  I  n  a  l  l  f  o  u  r  d  i  f  f  e  r  e  n  t  i  s  o  m  e  r  s  o  f  *B*  *.* | | | | | | | |
| 42 | **(a)**  (not ) | | | | | | | |
| 46 | **(a)** | | | | | | | |
| 49 | **(c)**  is diamagnetic | | | | | | | |
| 53 | **(d)** | | | | | | | |
| 56 | **(d)**  of Taj Mahal is affected by acid rain making its surface rough (called cancer) | | | | | | | |
| 58 | **(c)**  dissolves remains insoluble  soluble | | | | | | | |
| 62 | **(b)**  is a double oxide  is not affected by  changes to | | | | | | | |
| 71 | **(a)**  is precipitated in medium | | | | | | | |
| 72 | **(d)**  Stability of  Due to inert pair effect | | | | | | | |
| 73 | **(a)** | | | | | | | |
| 74 | **(c)**  on hydrolysis will produce as follows    is unstable compound and it loses water molecule to give . But silicon atom because of its very large size in comparison to oxygen, is unable to form -bond. Thus, the product of hydrolysis is polymeric in nature. | | | | | | | |
| 76 | **(b)**  Ligand in complexes, it is a Lewis base | | | | | | | |
| 77 | **(d)** | | | | | | | |
| 78 | **(d)**    Thus, reducing action of and is specific true  true  alcohol | | | | | | | |
| 79 | **(c)**  fumes | | | | | | | |
| 82 | **(d)**  is soluble in | | | | | | | |
| 85 | **(a)** | | | | | | | |
| 86 | **(b)** | | | | | | | |
| 88 | **(d)** | | | | | | | |
| 89 | **(b)**  Octahedral tetrahedral | | | | | | | |
| 92 | **(b)**  Due to tetravalent nature of carbon | | | | | | | |
| 97 | **(d)**  HF can’t be stored in glass bottles | | | | | | | |
| 99 | **(a)**  Oxide  Since carbonate is decomposed by oxide, forming thus, oxide is acidic in nature, and thus is oxide that of non-metal | | | | | | | |
| 103 | **(d)** | | | | | | | |
| 109 | **(d)**  Due to inert-pair effect stability of +2 oxidation state increases and that of +4 oxidation state decreases along a group 14 | | | | | | | |
| 110 | **(a)**  Dibasic monobasic | | | | | | | |
| 125 | **(d)**  There is free rotation about bond and in liquid and gaseous state exists as non-eclipsed and planar structure | | | | | | | |
| 126 | **(d)**  1  monobasic  dibasic  tribasic  Thus, | | | | | | | |
| 128 | **(b)** | | | | | | | |
| 130 | **(a)** | | | | | | | |
| 133 | **(d)** | | | | | | | |
| 138 | **(b)** | | | | | | | |
| 140 | **(c)**  phosgene | | | | | | | |
| 142 | **(a)**  tetrahedral  (one lone pair)  (two lone pairs) | | | | | | | |
| 147 | **(d)**  (a) bond energy decreases true  (b) is electron-deficient and thus is a Lewis acid true  (c) is hydrated due to charge and smaller cationic size true | | | | | | | |
| 150 | **(a)**  Central boron atom in is electron deficient, therefore it accepts a pair of electron, hence it is weak Lewis acid. There is no -orbital of suitable energy in boron atom. So, it can accommodate only one additional electron pair in its outermost shell. Thus, is a monobasic weak Lewis acid.  base acid | | | | | | | |
| 151 | **(c)**  weak base strong acid | | | | | | | |
| 156 | **(b)** | | | | | | | |
| 158 | **(b)** | | | | | | | |
| 163 | **(a)**  is protonated most easily  Thus, is most negative | | | | | | | |
| 166 | **(d)**  Insoluble  does not react  soluble | | | | | | | |
| 168 | **(d)**  All these noble metals soluble in aqua regia  (1 part (conc) 3 parts (conc)) | | | | | | | |
| 170 | **(a)**  has two types of bonds  formed by sharing of one electron between B and H  formed by sharing of two electrons between B and H | | | | | | | |
| 171 | **(d)**  There is no repulsion, thus bond angle of is retained | | | | | | | |
| 175 | **(a)** | | | | | | | |
| 176 | **(a)**  This reaction is reversible reaction because sodium metaborate, formed by the reaction between and gets hydrolysed to regenerate and .  If some quantity of polyhydroxy compounds like -1, 2-diol, catechol, glycerol etc is added to the reaction mixture then the combines with such polyhydroxy compounds to give chelated complex compound. Due to complex compound formation, stability increases and due to higher stability of complex, reaction moves in forward direction. | | | | | | | |
| 178 | **(c)** | | | | | | | |
| 182 | **(a)**  The important ore of tin is cassiterite . Tin is extracted from cassiterite ore by carbon reduction method in a blast furnace.  The product often contain traces of iron which is removed by blowing air through the melt to oxidise to FeO which then floats to the surface.  . | | | | | | | |
| 188 | **(d)** | | | | | | | |
| 190 | **(b)**  Ag and Au are extracted by this method | | | | | | | |
| 191 | **(c)** | | | | | | | |
| 194 | **(d)**  Artificial diamond | | | | | | | |
| 195 | **(c)**  Acid salts have ionisable and can further react with base forming next series of salts  **Salts Normal salt Acid salt**  monobasic  dibasic  tribasic  dibasic | | | | | | | |
| 198 | **(a)** | | | | | | | |
| 205 | **(d)**    Each P-atom is hybridised  Thus, -character is 75% | | | | | | | |
| 206 | **(d)**  have N-atom with +5 oxidation number | | | | | | | |
| 209 | **(a)** | | | | | | | |
| 213 | **(c)** | | | | | | | |
| 218 | **(b)**  Charge  Two  Seven | | | | | | | |
| 220 | **(c)**  Coloured cations are detected | | | | | | | |
| 222 | **(c)** | | | | | | | |
| 223 | **(a)**  It is weak monobasic acid | | | | | | | |
| 226 | **(b)**  Due to vacant electrons | | | | | | | |
| 228 | **(d)** | | | | | | | |
| 234 | **(d)**  Oxide  Oxide  Oxide | | | | | | | |
| 241 | **(b)** | | | | | | | |
| 247 | **(d)** | | | | | | | |
| 249 | **(c)** | | | | | | | |
| 252 | **(a)** | | | | | | | |
| 257 | **(d)**  Borax | | | | | | | |
| 260 | **(a)**  Covalent | | | | | | | |
| 263 | **(b)**  NO and have unpaired electrons, thus paramagnetic | | | | | | | |
| 271 | **(d)**  All being trivalent | | | | | | | |
| 274 | **(c)** | | | | | | | |
| 276 | **(a)** | | | | | | | |
| 277 | **(d)** | | | | | | | |
| 278 | **(a)**  and | | | | | | | |
| 288 | **(d)**  Due to inert-pair effect | | | | | | | |
| 289 | **(c)** | | | | | | | |
| 291 | **(b)**  green | | | | | | | |
| 293 | **(d)** | | | | | | | |
| 294 | **(b)** | | | | | | | |
| 296 | **(c)**  Hydration is an exothermic process | | | | | | | |
| 302 | **(c)**  I. is monobasic acid forming  II. forms two series of salts and  Thus, dibasic acid  III. is dibasic acid | | | | | | | |
| 305 | **(a)**  ON  +3  +3 | | | | | | | |
| 306 | **(d)**  Graphite is present in lead pencils | | | | | | | |
| 307 | **(b)**  Holme’s signals are used to guide the ships. Containers with holes and filled with and are thrown into sea water. Water reacts with forming and forming  further reacts with and burns with flame which further ignites and flame in the form of torch is helpful in guiding the ways to missing ships | | | | | | | |
| 310 | **(b)**  Ionic compounds have high m.p. and high b.p. | | | | | | | |
| 311 | **(b)** | | | | | | | |
| 314 | **(a)**  +1  +2  +3  +4  +5 | | | | | | | |
| 316 | **(a)** | | | | | | | |
| 317 | **(d)**  and , are all electron-deficients, hence dimer formation takes place | | | | | | | |
| 318 | **(d)**  There is no bond in | | | | | | | |
| 320 | **(c)**  Since and bonds are not affected, hence hydrolysis takes place at equal rates | | | | | | | |
| 323 | **(c)**  reacts with Al and Zn both thus cannot be stored in the vessel made of Al or Zn | | | | | | | |
| 325 | **(d)** | | | | | | | |
| 327 | **(a)**  In this process, molten zinc is added to mineral when silver is extracted into zinc in larger quantity than lead | | | | | | | |
| 330 | **(b)**  phosgene | | | | | | | |
| 333 | **(b)**  is formed | | | | | | | |
| 334 | **(b)** | | | | | | | |
| 338 | **(c)** | | | | | | | |
| 343 | **(c)**  (ON of +3 in both)  (ON of +5 in both) | | | | | | | |
| 346 | **(d)**  Methanides | | | | | | | |
| 349 | **(b)**  The structure of silicates has been found with the help of X-ray diffraction technique. All silicates have tetrahedral ion as a basic building unit all silicates are composed of many units. Tetrahedral shape of ion is due to -hybridisation of Si-atom. Sheet silicates are formed when three oxygen atoms (bridging O-atoms) of each unit are shared. Hence, the general formula of sheet silicates is | | | | | | | |
| 350 | **(d)**  (superoxide) is paramagnetic | | | | | | | |
| 359 | **(a,b,c)**  exists in quartz , tridymite and cristobalite forms and each of these have a different structure at high and low temperatures | | | | | | | |
| 365 | **(a,c,d)**  B, Al and show a characteristic oxidation state of +3 white. shows +1 oxidation state which is more stable than+3 oxidation state | | | | | | | |
| 372 | **(b,d)**  Conc. dehydrating agent. Oxalic acid on dehydration will give CO and  COOH  |  COOH | | | | | | | |
| 381 | **(a,d)**  CO has the structure C Water gas is a mixture of CO and It acts as reducing agent as | | | | | | | |
| 391 | **(a,b,d)**  Tin (II) chloride, is a reducing agent. Therefore, it can form colloidal gold form gold salt solution | | | | | | | |
| 394 | **(b)** | | | | | | | |
| 395 | **(c)**  Si bonds and Si has no tendency to form double bonds with itself | | | | | | | |
| 396 | **(d)**  Increased stability of lower valent states on descending a group is illustrated by the facts that | | | | | | | |
| 397 | **(b)**  Since B has 6 electrons in the outer shell in molecules, it can readily accept a lone pair of electrons from a donor atoms | | | | | | | |
| 398 | **(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. | | | | | | | |
| 399 | **(a)**  Catenation means the tendency of an element to from chains of identical atoms which is pronounced in sulphur among chalcogens. | | | | | | | |
| 400 | **(a)**  The ignition temperature of white P is low (about ) in air. It readily catches fire giving dense fumes of phosphrous pentoxide. It is therefore kept in water. | | | | | | | |
| 401 | **(c)**  Calcium carbide on hydrolysis gives acetylene. Calcium carbide contains anion | | | | | | | |
| 402 | **(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. | | | | | | | |
| 403 | **(a)**  The compound of oxygen and fluorine is more electronegative than oxygen fluorides as fluorine is more electronegative than oxygen | | | | | | | |
| 404 | **(a)**  Liquid ammonia has a large heat of vaporization (0.327 cal/g). It is therefore used in ice plants. | | | | | | | |
| 413 | **(c)**  Boric acid is Lewis acid, Boron possess hybridisaion and their molecules are held together by hydrogen bonding | | | | | | | |
| 414 | **(d)**  Only one electron pair of pyridine can be accommodated not two electron pairs | | | | | | | |