**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 505**

**Time :** 20:39:00 **CHEMISTRY**

**Marks :** 1219

8.THE D-AND F-BLOCK ELEMENTS

**Single Correct Answer Type**

| 1. | The oxygen carrying pigment, oxy-haemocyanin, containing two copper ions is diamagnetic, because | | | | | | | |
|  | a) | The two copper ions are in +1 oxidation state | | | | | | | |
|  | b) | One of the copper ions is in +1 oxidation state and the other is in +2 oxidation state | | | | | | | |
|  | c) | There are strong anti-ferromagnetic interactions between the two copper ions | | | | | | | |
|  | d) | There are ferromagnetic interactions between the two copper ions | | | | | | | |
| 2. | Select the correct statement | | | | | | | |
|  | a) | is called epsom salt | | | | | | | |
|  | b) | is isomorphous with Glauber’s salt | | | | | | | |
|  | c) | with is called lithopone | | | | | | | |
|  | d) | All the above are correct statement | | | | | | | |
| 3. | Which of the following is paramagnetic as well as coloured ion? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 4. | Which one of the following nitrates will leave behind a metal on strong heating? | | | | | | | |
|  | a) | Ferric nitrate | b) | Copper nitrate | c) | Manganese nitrate | d) | Silver nitrate |
| 5. | Out of isostructural are | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 6. | (trivalent lanthanides ions) have EC | | | | | | | |
|  | a) | to | | | b) | to | | |
|  | c) | to | | | d) | to | | |
| 7. | Stainless steel is an alloy of | | | | | | | |
|  | a) | Cu | b) | Ni and Cr | c) |  | d) | Zn |
| 8. | Hypo | | | | | | | |
|  | a) | Dissolves in photographic plate | | | | | | | |
|  | b) | Gives white precipitate with white precipitate changes to black on dilution | | | | | | | |
|  | c) | Gives both reactions | | | | | | | |
|  | d) | Gives none of the above reactions | | | | | | | |
| 9. | Calomel on reaction with ammonium hydroxide gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 10. | Which forms protective and non-corrosive oxide layer? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 11. | What are the species and in the following | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 12. | The metal present in vitamin is | | | | | | | |
|  | a) | Cobalt | b) | Iron | c) | Manganese | d) | Magnesium |
| 13. | Of the following transition metals, the maximum number of oxidation states are exhibited by | | | | | | | |
|  | a) | Chromium | b) | Manganese | c) | Iron | d) | Titanium |
| 14. | The correct order of ionic radii of and is  (Atomic number of ) | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 15. | Coagulation of blood takes place by | | | | | | | |
|  | a) | Ferric alum | b) | Potash alum | c) | Both (a) and (b) | d) | None of these |
| 16. | spot can be bleached by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 17. | If would exist as a complex, one mole of it in aqueous solution on reaction with excess of forms | | | | | | | |
|  | a) | 1 mole of (white precipitate) | | | b) | 2 moles of | | |
|  | c) | 3 moles of | | | d) | No reaction | | |
| 18. | A certain metal will liberate hydrogen from dilute acids. It will react with water to form hydrogen only when the metal is heated and the water is in the form of steam. The metal is probably | | | | | | | |
|  | a) | Iron | b) | Potassium | c) | Copper | d) | Mercury |
| 19. | Most transition metals  I. forms sets of compounds which display different oxidation states of the metal  II. form coloured ions in solution  III. burn vigorously in oxygen  IV. replace from dilute acids | | | | | | | |
|  | a) | I, II, III are correct | b) | II, III, IV and correct | c) | I, II are correct | d) | All are correct |
| 20. | On passing gas into alkaline hydrated solution | | | | | | | |
|  | a) | Red purple solution of is formed | | | | | | | |
|  | b) | Colourless is formed due to dissolution of into | | | | | | | |
|  | c) | is formed | | | | | | | |
|  | d) | No reaction takes place | | | | | | | |
| 21. | The number of moles of reduced by one mole of KI in alkaline medium is | | | | | | | |
|  | a) | One fifth | b) | Five | c) | One | d) | Two |
| 22. | The electronic configuration of (At. no. 64) is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 23. | Iron is dropped in very dil. , it gives | | | | | | | |
|  | a) | Ferric nitrate | | | b) | Ferric nitrate and | | |
|  | c) | Ferrous nitrate and ammonium nitrate | | | d) | Ferrous nitrate and nitric oxide | | |
| 24. | The element Ds lies in | | | | | | | |
|  | a) | -block | b) | -block | c) | -block | d) | -block |
| 25. | The reactivity of transition elements decreases with | | | | | | | |
|  | a) | The decrease in the atomic number | | | b) | The increase in the atomic umber | | |
|  | c) | Low heat of hydration | | | d) | None of the above | | |
| 26. | Which of the following is used as purgative? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 27. | Which of the following are sets of diamagnetic species? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 28. | Which forms interstitial compound? | | | | | | | |
|  | a) | Fe | b) | Co | c) | Ni | d) | All of these |
| 29. | Europium is | | | | | | | |
|  | a) | -block element | b) | -block element | c) | -block element | d) | -block element |
| 30. | Which of the following is not an actinoid? | | | | | | | |
|  | a) | Am | b) | Cm | c) | Fm | d) | Tm |
| 31. | The methods chiefly used for the extraction of lead and tin from their ores are respectively | | | | | | | |
|  | a) | Self reduction and carbon reduction | | | b) | Self reduction and electrolytic reduction | | |
|  | c) | carbon reduction and self reduction | | | d) | Cyanide process and carbon reduction | | |
| 32. | Cementite is | | | | | | | |
|  | a) | Interstitial compound of iron and carbon | | | b) | An alloy of Fe and Cr | | |
|  | c) | A compound resembling cement | | | d) | An ore of iron | | |
| 33. | Which is the correct statement? | | | | | | | |
|  | a) | Ammoniacal is used to measure the amount of CO in gas samples | | | | | | | |
|  | b) | Ammoniacal gives red ppt with | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 34. | The diamagnetic species is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 35. | Rust contains . Rust spots can be removed by | | | | | | | |
|  | a) | (hypo) | b) |  | c) | (oxalic acid) | d) |  |
| 36. | Which of the following exists as white salt in anhydrous state? | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of theses |
| 37. | When is heated  is heated | | | | | | | |
|  | a) | In both cases is formed | | | b) | In both cases is formed | | |
|  | c) | In and in are formed | | | d) | In and in are formed | | |
| 38. | Which is the correct statement? | | | | | | | |
|  | a) | In less acidic solution and give violet coloured diamagnetic ion | | | | | | | |
|  | b) | In alkaline (with tetraperoxo species) is formed | | | | | | | |
|  | c) | In ammoniacal solution, gives | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 39. | Sugar in urine sample can be detected by  I. Fehling’s solution  II. Benedict’s solution  III. Tollen’s solution  Select the correct alternate | | | | | | | |
|  | a) | I, II, III | b) | I, III | c) | I, II | d) | II, III |
| 40. | Haemoglobin and chlorophyll contain respectively | | | | | | | |
|  | a) | Fe, Co | b) | Fe, | c) | Mg, Fe | d) | Fe, Mg |
| 41. | Traces of in conc. may change to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 42. | Which is not blackened by atmosphere ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 43. | In has +3 state. It can be decided by | | | | | | | |
|  | a) | Magnetic measurement | | | b) | Colligative property | | |
|  | c) | Colour | | | d) | Hybridization | | |
| 44. | Which among the following is consumed by humans in the elemental form? | | | | | | | |
|  | a) | Cu | b) |  | c) | Ag | d) | Hg |
| 45. | Anhydrous ferric chloride is prepared by | | | | | | | |
|  | a) | Heating hydrated ferric chloride at a high temperature in a stream of air | | | | | | | |
|  | b) | Heating metallic iron in a stream of dry chlorine gas | | | | | | | |
|  | c) | Reaction of ferric oxide with | | | | | | | |
|  | d) | Reaction of metallic iron with | | | | | | | |
| 46. | Select the correct relative stability | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 47. | Which is wrongly matched? | | | | | | | |
|  | a) | Duralumin | | | b) | Alnico | | |
|  | c) | German silver | | | d) | Monel metal | | |
| 48. | Which of the following is not correct? | | | | | | | |
|  | a) | is less basic than | | | | | | | |
|  | b) | In lanthanide series ionic radius of ion decreases | | | | | | | |
|  | c) | La is actually an element of transition series rather lanthanide | | | | | | | |
|  | d) | Atomic radius of and are same because of lanthanide contraction | | | | | | | |
| 49. | The atomic numbers of vanadium (V), chromium (Cr), manganese and iron are respectively 23, 24, 25 and 26. Which one of these may be expected to have the highest second ionization enthalpy? | | | | | | | |
|  | a) | V | b) | Cr | c) |  | d) | Fe |
| 50. | In context with the transition elements, which of the following statements is incorrect? | | | | | | | |
|  | a) | In addition to the normal oxidation state, the zero oxidation state is also shown by these elements in complexes. | | | | | | | |
|  | b) | In the highest oxidation state, the transition metal shows basic character and form cationic complexes. | | | | | | | |
|  | c) | In the highest oxidation state of the first five transition elements (Sc to Mn), all the and electrons are used for bonding. | | | | | | | |
|  | d) | Once the configuration is exceeded, the tendency to involve all the electrons in bonding decreases. | | | | | | | |
| 51. | is purple while is colourless because | | | | | | | |
|  | a) | There is no crystal field effect in | | | | | | | |
|  | b) | has configuration | | | | | | | |
|  | c) | has configuration | | | | | | | |
|  | d) | is a very small cation when compared to and hence, does not absorb any radiation | | | | | | | |
| 52. | In dilute alkaline solution changes to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 53. | Among the following pair of ions, the lower oxidation state in aqueous solutions is more stable than the other in | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 54. | Interstitial compound is formed by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 55. | Which of the following compounds is amphoteric? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 56. | can be estimated volumetrically | | | | | | | |
|  | a) | By reaction with KI followed by reaction with | | | | | | | |
|  | b) | By reaction with | | | | | | | |
|  | c) | By reaction with | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 57. | The atomic size of cerium and promethium is quite close, due to | | | | | | | |
|  | a) | They are in same period in Periodic Table | | | | | | | |
|  | b) | Their electronic configuration is same | | | | | | | |
|  | c) | -electrons have poor shielding effect | | | | | | | |
|  | d) | Nuclear charge is higher on cerium than promethium | | | | | | | |
| 58. | The basic and amphoteric oxides of transition metals are | | | | | | | |
|  | a) | Soluble in oxidizing acids forming hexa-aquo ions | | | | | | | |
|  | b) | Insoluble in oxidizing acids forming hexa-aquo ions | | | | | | | |
|  | c) | Soluble in non-oxidising acids forming hexa-aquo ions | | | | | | | |
|  | d) | Insoluble in non-oxidising acids forming hexa-aquo ions | | | | | | | |
| 59. | Most common oxidation state of lanthanides is | | | | | | | |
|  | a) | +2 | b) | +3 | c) | +4 | d) | +5 |
| 60. | Which of the following alloys is used for making magnets for heating aids? | | | | | | | |
|  | a) | Alnico | b) | German silver | c) | Invar | d) | Monel metal |
| 61. | Which of the following is not an actinide? | | | | | | | |
|  | a) | Curium | b) | Californium | c) | Uranium | d) | Terbium |
| 62. | Select the correct statement | | | | | | | |
|  | a) | reduces to metallic Ag | | | | | | | |
|  | b) | Organic tissues turn black by reducing it to Ag | | | | | | | |
|  | c) | is soluble in KCN | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 63. | When is fused with KOH, a coloured compound formed, the product and its colour is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 64. | is an amphoteric oxide and in acidic medium it forms | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 65. | Which of the following does not react with ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 66. | In acidic medium changes (deep violet solution in ether) having two peroxy linkage. Oxidation number of in is | | | | | | | |
|  | a) | +10 | b) |  | c) |  | d) | +6 |
| 67. | Solder is an alloy of | | | | | | | |
|  | a) | 70% lead, 30% tin | b) | 30% lead, 70% tin | c) | 80% lead, 20% tin | d) | 90% copper, 10% tin |
| 68. | In acidic medium | | | | | | | |
|  | a) | Disproportionates to and | | | b) | Is oxidized to | | |
|  | c) | Is reduced to | | | d) | Is reduced to | | |
| 69. | Green vitriol is formed by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 70. | The lanthanide contraction is responsible for the fact that | | | | | | | |
|  | a) | Zn and Y have about the same radii | | | | | | | |
|  | b) | and have similar oxidation state | | | | | | | |
|  | c) | and have about the same radii | | | | | | | |
|  | d) | and Zn have the same oxidation state | | | | | | | |
| 71. | can be converted to | | | | | | | |
|  | a) | By oxidation with | | | b) | By electrochemical oxidation at anode | | |
|  | c) | By both (a) and (b) methods | | | d) | By none of the above methods | | |
| 72. | Bell-metal is an alloy of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 73. | When KCN comes in contact with blood, one dies immediately, it is due to | | | | | | | |
|  | a) | forms stable complex with iron of haemoglobin of blood | | | | | | | |
|  | b) | combines with of blood causing it poison | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 74. | The ability of -block elements to form complexes is due to | | | | | | | |
|  | a) | Small and highly charged ions | | | | | | | |
|  | b) | Vacant low energy orbitals to accept lone pair of electrons from ligands | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 75. | on heating with aqueous , gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 76. | Fehling’s solution consists of two separate alkaline solutions. One solution contains . The other solution contains | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 77. | Aluminium appears like gold when mixed with | | | | | | | |
|  | a) | 90% Cu | b) | 75% Ni | c) | 80% | d) | 80% Co |
| 78. | In transition series, if nuclear charge increases, the screening effect | | | | | | | |
|  | a) | Increases | | | b) | Decreases | | |
|  | c) | First decreases and then increases | | | d) | First increases and then decreases | | |
| 79. | Which of the following factors may be regarded as the main cause of lanthanide contraction? | | | | | | | |
|  | a) | Greater shielding of -electron by -electrons | | | | | | | |
|  | b) | Poorer shielding of -electron by -electrons | | | | | | | |
|  | c) | Effective shielding of one -electrons by another in the subshell | | | | | | | |
|  | d) | Poor shielding of one of -electrons by another in the subshell | | | | | | | |
| 80. | Lanthanoids are | | | | | | | |
|  | a) | 14 elements in the sixth period (atomic number = 90 to 103) that are filling -sublevel | | | | | | | |
|  | b) | 14 elements in the seventh period (atomic no. = 90 to 103) that are filling -sublevel | | | | | | | |
|  | c) | 14 elements in the sixth period (atomic no. =58 to 71) that are filling -sublevel | | | | | | | |
|  | d) | 14 elements in the seventh period (atomic no. = 58 to 71) that are filling -sublevel | | | | | | | |
| 81. | Finely divided iron combines with CO to give | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 82. | Cerium is an important member of lanthanides. Which of the following statements about cerium is incorrect? | | | | | | | |
|  | a) | The common oxidation states of cerium are +3 and +4 | | | | | | | |
|  | b) | The +3 oxidation states of cerium is more stable than the +4 state | | | | | | | |
|  | c) | The +4 oxidation state of cerium is not known in solutions | | | | | | | |
|  | d) | Cerium (IV) acts as an oxidizing agent | | | | | | | |
| 83. | At changes to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | No change |
| 84. | Arrange and in increasing oxidizing power | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 85. | ionises as…. and cation bus….. unpaired electron(s) | | | | | | | |
|  | a) | and , two | b) | and two | c) | and one | d) | and , no |
| 86. | The colourless species is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 87. | Which of the following is called white vitriol? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 88. | To protect iron against corrosion, the most durable metal plating on it, is | | | | | | | |
|  | a) | Nickel plating | b) | Tin planting | c) | Copper plating | d) | Zinc plating |
| 89. | Which represents correct comparison of the stability of ions? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 90. | Increasing value of magnetic moments of  I: ,  is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 91. | , in traces, can be tested using | | | | | | | |
|  | a) | Sodium nitroprusside | | | b) | Dimethyl glyoxime | | |
|  | c) | Ammonium sulphocyanide | | | d) | Potassium ferrocyanide | | |
| 92. | The main reason for larger number of oxidation state exhibited by the actinides than that corresponding lanthanides, is | | | | | | | |
|  | a) | Lesser energy difference between and orbitals than between and -orbitals | | | | | | | |
|  | b) | Larger atomic size of actinides than the lanthanides | | | | | | | |
|  | c) | More energy difference between and orbitals than between and -orbitals | | | | | | | |
|  | d) | Greater reactive nature of the actinides than the lanthanides | | | | | | | |
| 93. | Consider a titration of potassium dichromate solution with acidified Mohr’s salt solution using diphenylamine as indicator. The number of moles of Mohr’s salt required per mole of dichromate is | | | | | | | |
|  | a) | 3 | b) | 4 | c) | 5 | d) | 6 |
| 94. | At exists as | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 95. | Which is not the true statement? | | | | | | | |
|  | a) | Ions of -block elements are coloured due to - transition | | | | | | | |
|  | b) | Ions of -block elements are coloured due to - transition | | | | | | | |
|  | c) | are coloured complexes | | | | | | | |
|  | d) | is colourless ion | | | | | | | |
| 96. | The oxides, and are strongly | | | | | | | |
|  | a) | Neutral | b) | Acidic | c) | Basic | d) | None of these |
| 97. | Which of the following transition element shows the highest oxidation state? | | | | | | | |
|  | a) |  | b) | Fe | c) | V | d) | Cr |
| 98. | Magnetic moment of Fe is similar to that of | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 99. | On addition of to four different test tubes containing different solutions, one of them gave a white precipitate. It may be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 100. | is used as an external indicator in the dichromate estimation of . Following change is observed | | | | | | | |
|  | a) | Colourless to blue | b) | Blue to red | c) | Colourless to red | d) | Blue to colourless |
| 101. | A solution of a metal ion when treated with KI gives a red precipitate which dissolves in excess KI to give a colourless solution. Moreover, the solution of metal ion on treatment with a solution of cobalt (II) thiocyanate gives rise to a deep blue crystalline precipitate. The metal ion is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 102. | The oxide is | | | | | | | |
|  | a) | Acidic | b) | Amphoteric | c) | Basic | d) | Ozonide |
| 103. | Which alloy contains Cu, and Zn? | | | | | | | |
|  | a) | Gun metal | b) | Solder | c) | Type metal | d) | Bronze |
| 104. | By annealing, steel | | | | | | | |
|  | a) | Become soft | | | b) | Becomes liquid | | |
|  | c) | Becomes hard and brittle | | | d) | Is covered with a thin film of | | |
| 105. | Spin only magnetic moment of the compound is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 106. | Match column I with Column II and select the correct answer using the codes given below the Columns   |  |  |  | | --- | --- | --- | |  | Column I  (Metals) | Column II  (Ores) | | A. | Zinc | Azurite | | B. | Tin | Carnallite | | C. | Copper | Calamine | | D. | Magnesim | Cassiterite |   Codes  A B C D | | | | | | | |
|  | a) | 3 4 2 1 | | | b) | 3 4 1 2 | | |
|  | c) | 4 1 3 2 | | | d) | 4 3 2 1 | | |
| 107. | Select the correct statement(s) | | | | | | | |
|  | a) | Colour of the ion arises due to - transition | | | | | | | |
|  | b) | Colour we observe is the complimentary colour absorbed by the compound | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 108. | The colour imparted by Co(II) compounds to glass is | | | | | | | |
|  | a) | Green | b) | Deep blue | c) | Yellow | d) | Red |
| 109. | Extraction for zinc from zinc blende is achieved by | | | | | | | |
|  | a) | Electrolytic reduction | | | | | | | |
|  | b) | Roasting followed by reduction with carbon | | | | | | | |
|  | c) | Roasting followed by reduction with another metal | | | | | | | |
|  | d) | Roasting followed by self reduction | | | | | | | |
| 110. | Which of the following is colourless? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 111. | If gas is passed into a solution of having excess of KCN | | | | | | | |
|  | a) | and both are precipitated | | | | | | | |
|  | b) | Soluble complex and are formed and no effect of passing gas | | | | | | | |
|  | c) | Soluble complex and as are formed, of which is precipitated as yellow ppt | | | | | | | |
|  | d) | Soluble complex and are formed of which is precipitate as black ppt | | | | | | | |
| 112. | Some of the following reagents are used as **primary standard**  I: II: ; III:  IV: V:  Select the primary standard | | | | | | | |
|  | a) | All except II, IV | b) | All except I, II | c) | All except I, II, III | d) | Only IV |
| 113. | (1 mol) in neutral aqueous medium disproportionate to | | | | | | | |
|  | a) | of and of | | | b) | of and of | | |
|  | c) | of and of | | | d) | of and of | | |
| 114. | Which pair of compounds is expected to show similar colour in aqueous medium? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 115. | An extremely hot copper wire reacts with steam to produce | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 116. | A red solid is insoluble in water. However, it becomes soluble if some KI is added to water. Heating the red solid in a test tube results in liberation of some violet coloured fumes and droplets of a metal appear on the cooler parts of the test tube. The red solid is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 117. | Select the correct order of sizes of different species | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) |  | | | | | | | |
| 118. | Stainless steel does not rust because | | | | | | | |
|  | a) | Chromium and nickel combine with iron | | | | | | | |
|  | b) | Chromium forms an oxide layer and protects iron from rusting | | | | | | | |
|  | c) | Nickel present in it, does not rust | | | | | | | |
|  | d) | Iron forms a hard chemical compound with chromium present in it | | | | | | | |
| 119. | and are colourless. and are also colourless but and are coloured. This is due to | | | | | | | |
|  | a) | polarises and | | | b) | has unpaired -orbital | | |
|  | c) | depolarises and | | | d) | None of the above is correct | | |
| 120. | Among K, Ca, Fe and Zn the element which can form more than one binary compound with chlorine is | | | | | | | |
|  | a) | Fe | b) | Zn | c) | K | d) | Ca |
| 121. | is used to clear metal surface because | | | | | | | |
|  | a) | It dissociates into and on heating | | | | | | | |
|  | b) | forms soluble complexes with the metal | | | | | | | |
|  | c) | forms a volatile | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 122. | Stainless steel contains | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 123. | Select the correct statement | | | | | | | |
|  | a) | Fe and Mo atoms are present in nitrogen fixing enzymes | | | | | | | |
|  | b) | A cobalt atom lies at the centre of the vitamin coenzyme | | | | | | | |
|  | c) | Fe atoms are involved in the ferrodoxins of photosynthetic process | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 124. | Lanthanide and actinides resemble in | | | | | | | |
|  | a) | Electronic configuration | | | b) | Oxidation state | | |
|  | c) | Ionization energy | | | d) | Formation of complexes | | |
| 125. | In sodium nitroprusside, | | | | | | | |
|  | a) | Oxidation state of is +2 | | | b) | This has as ligand | | |
|  | c) | Both (a) and (b) | | | d) | None of the above is correct | | |
| 126. | The reactivity of transition elements decreases with | | | | | | | |
|  | a) | The decrease in the atomic number | | | b) | The increase in the atomic number | | |
|  | c) | Low heat of hydration | | | d) | None of the above | | |
| 127. | Which of the following arrangements does not represent the correct order of the property stated against it? | | | | | | | |
|  | a) | paramagnetic behavior | | | | | | | |
|  | b) | ionic size | | | | | | | |
|  | c) | stability in aqueous solution | | | | | | | |
|  | d) | number of oxidation states | | | | | | | |
| 128. | There are three unpaired electrons in and calculated value of magnetic moment is 3.87 BM which is quite different from the experimental value of 4.40 BM. This is because of | | | | | | | |
|  | a) | Increase in number of unpaired electrons | | | | | | | |
|  | b) | Some contribution of the orbital motion of the electron to the magnetic moment | | | | | | | |
|  | c) | Change in orbital spin of the electron | | | | | | | |
|  | d) | - transition | | | | | | | |
| 129. | First IE of -elements are higher than those of and -elements. This is due to | | | | | | | |
|  | a) | Greater effective nuclear charge acting on outer valence electrons | | | | | | | |
|  | b) | Greater effective nuclear charge is experienced because of the weak shielding of the nucleus by -electrons | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 130. | Which is most soluble in water? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 131. | The incorrect configuration is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 132. | is actually | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 133. | is of intense pink colour, though is in (+7) oxidation state. It is due to | | | | | | | |
|  | a) | Oxygen gives colour to it | | | | | | | |
|  | b) | Charge transfer when gives its electron to oxygen | | | | | | | |
|  | c) | Charge transfer when oxygen gives its electron to making it hence, coloured | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 134. | Aqueous can neutralize as well as solution. Thus. is an | | | | | | | |
|  | a) | Acidic oxide | b) | Basic oxide | c) | Amphoteric oxide | d) | Amphiprotic oxide |
| 135. | Maximum oxidation state is shown by | | | | | | | |
|  | a) | Os | b) |  | c) | Cr | d) | Co |
| 136. | Match the Column I with Column II and select the correct answer using the codes given below the Columns   |  |  |  | | --- | --- | --- | |  | **Column I**  (Alloys) | **Column II**  (Constituents) | | A. | Gun metal | Lead + tin | | B. | German silver | Copper + tin + zinc | | C. | Brass | Copper + zinc | | D. | Solder | Copper + zinc + nickel |   Codes  A B C D | | | | | | | |
|  | a) | 1 3 4 2 | | | b) | 4 2 1 3 | | |
|  | c) | 2 4 3 1 | | | d) | 3 1 2 4 | | |
| 137. | Reason of passivity of iron is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 138. | Match the compounds of Column I with oxidation state of Column II   |  |  |  | | --- | --- | --- | |  | **Column I** | **Column II** | | A. |  | 5 | | B. |  | 2 | | C. |  | 6 | | D. |  | 3 |   Codes  A B C D | | | | | | | |
|  | a) | 3 6 5 4 | | | b) | 3 4 5 6 | | |
|  | c) | 4 5 6 3 | | | d) | 6 5 4 3 | | |
| 139. | Brown glass and cement have, which element common in them? | | | | | | | |
|  | a) | Fe | b) | Al | c) | Na | d) | All of these |
| 140. | Effective atomic number (EAN) of Fe in brown ring complex | | | | | | | |
|  | a) | 36 | b) | 37 | c) | 38 | d) | 39 |
| 141. | Match the catalysts in Column I with their uses in Column II   |  |  |  | | --- | --- | --- | |  | Column I | Column II | | A. |  | Adams catalyst in reduction | | B. |  | In preparation of | | C. |  | Reppe synthesis | | D. |  | Used as the Ziegler-Natta catalyst in polythene production | | E. | -complexes | Wacker process for converting |   Codes  A B C D E | | | | | | | |
|  | a) | 4 5 1 2 3 | | | b) | 4 5 2 1 3 | | |
|  | c) | 5 4 1 3 2 | | | d) | 2 1 3 5 4 | | |
| 142. | Which is not the true statement about ? | | | | | | | |
|  | a) | It is non-stoichiometric and is metal deficient | | | | | | | |
|  | b) | It is basic oxide | | | | | | | |
|  | c) | Its aqueous solution change to and then to by atmospheric oxygen | | | | | | | |
|  | d) | It gives red colour with | | | | | | | |
| 143. | A white solid , on heating gives off a gas which turns lime water milky; the residue is yellow when hot; white when cold. The solid is probably | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 144. | Which is the set of non-stoichiometric compound? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 145. | The composition of duralumin is | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 146. | changes to green by | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of thee |
| 147. | The pair of compounds having metals in their highest oxidation state of | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 148. | is brown-ring complex in . In this complex | | | | | | | |
|  | a) | NO transfers its electron to so that there are three electrons unpaired making iron as Fe(I) and nitrosyl as | | | | | | | |
|  | b) | Magnetic moment of Fe is 3.87 BM | | | | | | | |
|  | c) | The colour is due to charge transfer | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 149. | Four successive members of the first row transition elements are listed below with their atomic numbers. Which one of them is expected to have the highest third ionization enthalpy? | | | | | | | |
|  | a) | Vanadium | b) | Chromium | c) | Iron | d) | Manganese |
| 150. | In alkaline changes to tetraperoxo species… having oxidation number of as… | | | | | | | |
|  | a) | 6 | b) | 6 | c) | 5 | d) | 11 |
| 151. | in the above reaction is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 152. | Elements after atomic number 92 are called | | | | | | | |
|  | a) | Lanthanoids | | | b) | Actinoids | | |
|  | c) | Inner-transition elements | | | d) | Transuranium elements | | |
| 153. | The lanthanoid contraction is due to | | | | | | | |
|  | a) | Filling of before | | | b) | Filling of before | | |
|  | c) | Filling of before | | | d) | Filling of before | | |
| 154. | Which of the following types of metals form the most efficient catalysts? | | | | | | | |
|  | a) | Alkali metals | b) | Alkaline earth metals | c) | Transition metals | d) | All of the above |
| 155. | In reduction of dichromate by Fe(II), the number of electrons involved per chromium atom is | | | | | | | |
|  | a) | 2 | b) | 3 | c) | 4 | d) | 1 |
| 156. | Which is the coloured ion | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 157. | The compound that get oxidized even on exposure to air is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 158. | If zinc pieces are added yellow solution, it turns to very light green. It is because | | | | | | | |
|  | a) | solution is acidic due to hydrolysis and zinc added produces nascent hydrogen causing reduction of to | | | | | | | |
|  | b) | solution is basic and zinc added produces which reduces to | | | | | | | |
|  | c) | Zinc reduces to | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 159. | When is fused with KOH and , a coloured compound is formed, the product and its colour is | | | | | | | |
|  | a) | , green | b) | purple | c) | , brown | d) | , black |
| 160. | Mixture is supposed to contain nitrates of and . On adding dil. both are precipitated as white precipitate  Select the correct statement(s) | | | | | | | |
|  | a) | (white precipitate) is soluble in hot water and formation of yellow precipitate on adding KI to hot solution confirms | | | | | | | |
|  | b) | is blackened by , and change to by aqua-regia. can be detected by KI is formed | | | | | | | |
|  | c) | Both tests are conclusive | | | | | | | |
|  | d) | None of the tests is conclusive | | | | | | | |
| 161. | on heating gives a gas which is also given by | | | | | | | |
|  | a) | Heating | b) | Heating | c) |  | d) |  |
| 162. | Ferromagnetism is shown by | | | | | | | |
|  | a) | Zn, Cu, Cd | b) | Fe, Co, Ni | c) | Zn, Hg, Se | d) | All of these |
| 163. | Magnetic moment of and are . They are in order | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 164. | The trivalent ion having largest size is | | | | | | | |
|  | a) | Ti | b) |  | c) |  | d) | La |
| 165. | The nature of is | | | | | | | |
|  | a) | Acidic | b) | Basic | c) | Amphoteric | d) | None of these |
| 166. | Amongst the following, identify the species with an atom in +6 oxidation state | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 167. | Select the coloured and paramagnetic ions | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 168. | In every Cr is linked to | | | | | | | |
|  | a) | Two O atom | b) | Three O atoms | c) | Four O atoms | d) | Five O atoms |
| 169. | Silver ornaments turn black by atmospheric | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 170. | The highest magnetic moment will be shown by | | | | | | | |
|  | a) | Ni | b) | Co | c) | Fe | d) | Sc |
| 171. | Which one of the following elements shows maximum number of different oxidation states in its compounds? | | | | | | | |
|  | a) |  | b) | La | c) |  | d) | Am |
| 172. | Which is not the true statement about ? | | | | | | | |
|  | a) | Its solution is unstable in acidic medium | | | | | | | |
|  | b) | Its small quantity added to conc. , a green coloured solution containing ions is formed | | | | | | | |
|  | c) | changes to in basic solution | | | | | | | |
|  | d) | It is self-indicator in or titration | | | | | | | |
| 173. | Addition of to give precipitate | | | | | | | |
|  | a) | White turning to red | | | b) | White turning to grey | | |
|  | c) | Black turning to white | | | d) | None of the above | | |
| 174. | Due to lanthanide contraction | | | | | | | |
|  | a) | Fe, Co, Ni have equal size | | | b) | and have equal size | | |
|  | c) | All -block ions have equal size | | | d) | All isoelectronic ions have equal size | | |
| 175. | Only +2, +3, +4 oxidation states are shown by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 176. | Pyrolusite in is used to prepare . Steps are    I and II are | | | | | | | |
|  | a) | Fuse with KOH/air, electrolytic oxidation | | | | | | | |
|  | b) | Fuse with KOH/air, electrolytic reduction | | | | | | | |
|  | c) | Fuse with conc /air, electrolytic reduction | | | | | | | |
|  | d) | All the above are correct | | | | | | | |
| 177. | Which catalyst is matched according to its name and function   |  |  |  | | --- | --- | --- | | **Catalyst** | **Name** | **Function** | | | | | | | | |
|  | a) | |  |  |  | | --- | --- | --- | |  | Fenton’s reagent | Oxidation of alcohols | | | | | | | | |
|  | b) | |  |  |  | | --- | --- | --- | |  | Ziegler-Natta | Polythene preparation | | | | | | | | |
|  | c) | |  |  |  | | --- | --- | --- | |  | Lindlar | Hydrogen to give -alkene | | | | | | | | |
|  | d) | |  |  |  | | --- | --- | --- | |  | Adam | Synthesis of | | | | | | | | |
| 178. | The radii of the elements from chromium to copper are very close to one another. This is due to | | | | | | | |
|  | a) | Lanthanide contraction | | | | | | | |
|  | b) | The fact that successive addition of -electrons screen the outer electrons from the inward pull of the nucleus | | | | | | | |
|  | c) | Increase in radii due to increase in is compensated by decrease in radii due to increase in | | | | | | | |
|  | d) | Atomic radii do not remain constant but decrease in a normal gradation | | | | | | | |
| 179. | Guigret’s green is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 180. | Which of the following pair of element cannot form an alloy? | | | | | | | |
|  | a) |  | b) |  | c) | Fe, C | d) | Hg, Na |
| 181. | The outer electronic configuration of transitional elements is | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 182. | Magnetic moment of is zero but that of is 2.83 BM  It is because of | | | | | | | |
|  | a) | Different oxidation state of Ni in two complexes | | | | | | | |
|  | b) | is a strong ligand making two unpaired electrons in paired while in , two electrons remain unpaired being weak ligand | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 183. | In which case(s) there is change in oxidation number | | | | | | | |
|  | a) | Aqueous solution of is acidified | | | b) | gas is passed into | | |
|  | c) | solution is made alkaline | | | d) | is dissolved in | | |
| 184. | The mercury is the only metal which is liquid at . This is due to its | | | | | | | |
|  | a) | Weak metallic bond | | | b) | High ionization energy | | |
|  | c) | High vapour pressure | | | d) | Both (a) and (b) | | |
| 185. | Consider the following statement  I. The size the lanthanide ions decreases as the atomic number of increase  II. Electronic spectra of lanthanides show very broad bands  III. As with transition metals, coordination number six is very common in lanthanide complexes  Which of the statements given above is/are correct? | | | | | | | |
|  | a) | I only | b) | I and II | c) | I and III | d) | III only |
| 186. | Which shows maximum magnetic moment among the bivalent ions of the first transition series? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 187. | There are three electrons unpaired in and calculated value of magnetic moment is 3.87 BM which is quite different from the experimental value of 4.40 BM. This is because of | | | | | | | |
|  | a) | Increase in number of unpaired electrons | | | | | | | |
|  | b) | Some contribution of the orbital motion of the electron to the magnetic moment | | | | | | | |
|  | c) | Change in orbital spin of the electron | | | | | | | |
|  | d) | - transition | | | | | | | |
| 188. | Select the correct statement(s) | | | | | | | |
|  | a) | - has hexagonally close-packed lattice of ions with ions in two-thirds of the octahedral holes | | | | | | | |
|  | b) | - has cubic close-packed arrangement of ion with ions randomly distributed in both the octahedral and tetrahedral sites | | | | | | | |
|  | c) | and all and tend to be non-stoichiometric | | | | | | | |
|  | d) | All the above are correct statements | | | | | | | |
| 189. | is the cation from | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 190. | The most abundant element is | | | | | | | |
|  | a) | Cu | b) | Hg | c) |  | d) | Fe |
| 191. | Which of the following chloride is water insoluble? | | | | | | | |
|  | a) |  | b) |  | c) | Both (a) and (b) | d) | None of these |
| 192. | KI and solutions on mixing produce | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 193. | Fe is made passive by | | | | | | | |
|  | a) |  | b) |  | c) | Aqua-regia | d) |  |
| 194. | The Mohr;s salt is shown by | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 195. | values and can be | | | | | | | |
|  | a) | 4 and 5 | b) | 4 and 8 | c) | 8 and 4 | d) | 8 and 9 |
| 196. | The incorrect statement for -block element is | | | | | | | |
|  | a) | It shows magnetic property | | | | | | | |
|  | b) | It has variable valency | | | | | | | |
|  | c) | It has tendency of formation of coloured ions | | | | | | | |
|  | d) | It has complete -orbitals | | | | | | | |
| 197. | German silver is an alloy of | | | | | | | |
|  | a) | Fe, Cr, Ni | b) | Ag, Cu, Au | c) | Cu, Zn, Ni | d) | Cu, Zn, |
| 198. | Among the following the coloured compound is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 199. | Which oxides will not give metal on heating? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 200. | The magnetic moment , of transition metals is related to the number of unpaired electrons, as | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 201. | Following elements do not show the properties characteristic of -block elements | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 202. | Impure metal form volatile compound with CO and then gives pure metal on heating. Metal is | | | | | | | |
|  | a) | Cu | b) | Fe | c) | Ni | d) | Pt |
| 203. | Which of the following lanthanide is commonly used? | | | | | | | |
|  | a) | Lanthanium | b) | Nobelium | c) | Thorium | d) | Cerium |
| 204. | The transition metal used as a catalyst is | | | | | | | |
|  | a) | Nickel | b) | Platinum | c) | Cobalt | d) | All of these |
| 205. |  | | | | | | | |
|  | a) | Reduces to | | | b) | Reduces to | | |
|  | c) | Complexes as | | | d) | Undergoes all the above are correct | | |
| 206. | Select the correct statement(s) | | | | | | | |
|  | a) | disproportionates to and in strongly acidic solution | | | | | | | |
|  | b) | Maximum oxidation state of is +7 | | | | | | | |
|  | c) | is stable | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 207. | Which of the following elements is responsible for oxidation of water to is biological processes? | | | | | | | |
|  | a) | Fe | b) | Cu | c) |  | d) | Mo |
| 208. | An aqueous solution of on addition of excess of concentrated turn blue due to formation of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 209. | Out of and | | | | | | | |
|  | a) | All have identical geometry | | | | | | | |
|  | b) | All are paramagnetic | | | | | | | |
|  | c) | All are diamagnetic | | | | | | | |
|  | d) | is diamagnetic but and are paramagnetic | | | | | | | |
| 210. | When  is oxidized by in alkaline medium, | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 211. | Factors which affect the stability of the compounds are | | | | | | | |
|  | a) | The energy of sublimation | | | b) | The lattice energy | | |
|  | c) | The salvation energy | | | d) | All of the above | | |
| 212. | Select the incorrect statement(s) | | | | | | | |
|  | a) | Ionisation energies of -elements are greater than those of and elements | | | | | | | |
|  | b) | is diamagnetic while is paramagnetic | | | | | | | |
|  | c) | is coloured while colourless | | | | | | | |
|  | d) | Transition elements cannot form complexes | | | | | | | |
| 213. | Second ionization energies of chromium and copper are larger than those of their neighbouring elements (). It is due to the fact that | | | | | | | |
|  | a) | Second electron in each case is removed from orbital | | | | | | | |
|  | b) | Second electron is removed from stable half-filled sub-orbit in case of chromium and from stable completely filled sub-robit in case of copper | | | | | | | |
|  | c) | Electrode potential of these elements (Cr and Cu) are higher than those of their neighbouring elements | | | | | | | |
|  | d) | Their atomic radii are different due to screening effect | | | | | | | |
| 214. | Alkaline (Baeyer’s reagent) can be used to test unsaturation in    In this case | | | | | | | |
|  | a) | Unsaturation in side-chain is affected | | | | | | | |
|  | b) | Unsaturation in benzene nucleus is affected | | | | | | | |
|  | c) | Unsaturation in both is affected | | | | | | | |
|  | d) | Baeyer’s reagent cannot be used | | | | | | | |
| 215. | Increasing basic properties of and are in order | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 216. | Which of the following dissolves in hot conc. solution? | | | | | | | |
|  | a) | Fe | b) | Zn | c) | Cr | d) | Ag |
| 217. | Fulminating gold is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 218. | The stability of ferric ion is due to | | | | | | | |
|  | a) | Half filled -orbitals | | | b) | Half filled -orbitals | | |
|  | c) | Completely filled -orbitals | | | d) | Completely filled -orbitals | | |
| 219. | Cuprous ion is colourless while cupric ion is coloured because | | | | | | | |
|  | a) | Both have half-filled -and -orbitals | | | | | | | |
|  | b) | Both have unpaired electrons in -orbitals | | | | | | | |
|  | c) | Cuprous ion has incomplete -orbital and cupric ion has a complete -orbital | | | | | | | |
|  | d) | Cuprous ion as a complete -orbital and cupric ion has an incomplete -orbital | | | | | | | |
| 220. | Select the correct statement for the lesser number of oxidations states in -series | | | | | | | |
|  | a) | In the beginning of the series it can be due to the presence of too few electrons to loose or share | | | | | | | |
|  | b) | Towards the end of the series, it can be ascribed to the presence of too many electrons and thus fewer empty orbitals to share electrons with the ligands | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 221. | The common oxidation state of the elements of lanthanide series is | | | | | | | |
|  | a) | +1 | b) | +3 | c) | +4 | d) | +6 |
| 222. | The element which forms ions in dimeric state is | | | | | | | |
|  | a) | Iron | b) | Mercury | c) | Cadmium | d) | nickel |
| 223. | At | | | | | | | |
|  | a) | Decomposes into and | | | | | | | |
|  | b) | Decomposes into and | | | | | | | |
|  | c) | Sublimes to give liquid | | | | | | | |
|  | d) | Sublimes to give gaseous dimer | | | | | | | |
| 224. | Formula of green vitriol oil is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 225. | is formed while testing | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 226. | Given below, catalyst and corresponding process/ reaction are matched. The mismatch is | | | | | | | |
|  | a) | Hydrogenation | | | | | | | |
|  | b) | Polymerisation | | | | | | | |
|  | c) | : Haber-Bosch process | | | | | | | |
|  | d) | Nickel : Hydrogenation | | | | | | | |
| 227. | Atoms of the transition elements are smaller than those of the -block elements. This is because of | | | | | | | |
|  | a) | Usual contraction in size across a horizontal period | | | | | | | |
|  | b) | Orbital electrons added to the penultimate -shell rather than to the outer shell of the atom | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| 228. | Transition metals show paramagnetism due to | | | | | | | |
|  | a) | Characteristic configuration | | | b) | High lattice energy | | |
|  | c) | Variable oxidation states | | | d) | Unpaired electrons | | |
| 229. | Which one of the following statements is not correct? | | | | | | | |
|  | a) | Zinc dissolves in sodium hydroxide solution | | | | | | | |
|  | b) | Carbon monoxide reduces iron (III) oxide to iron | | | | | | | |
|  | c) | Mercury (II) iodide dissolves in excess of potassium iodide solution | | | | | | | |
|  | d) | Tin (IV) chloride is made by dissolving tin solution in concentrated hydrochloric acid | | | | | | | |
| 230. | gas is obtained by various reactions but not by | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 231. | Which is called chromic acid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 232. | Which of the following statements concerning lanthanides elements is false? | | | | | | | |
|  | a) | Lanthanides are separated from one another by ion-exchange method | | | | | | | |
|  | b) | Ionic radii of trivalent lanthanides steadily increase with increase in the atomic number | | | | | | | |
|  | c) | All lanthanides are highly dense metals | | | | | | | |
|  | d) | More characteristic oxidation state of lanthanides elements is +3 | | | | | | | |
| 233. | Paramagnetism is given by the relation magnetons where ‘’ is the total spin. On this basis, the paramagnetism of ion is | | | | | | | |
|  | a) | 3.88 magnetons | b) | 2.83 magnetons | c) | 1.41 magnetons | d) | Zero |
| 234. | Isomorphous salts are | | | | | | | |
|  | a) | Green vitriol, blue vitriol and Epsom salt | | | b) | Green, vitriol, white vitriol and blue vitriol | | |
|  | c) | Green vitriol, white vitriol and Epsom salt | | | d) | Blue vitriol, white vitriol and Epsom salt | | |
| 235. | has a stronger polarizing power than that of because | | | | | | | |
|  | a) | ion has smaller than ion | | | | | | | |
|  | b) | has inert gas configuration whereas ion does not | | | | | | | |
|  | c) | Copper shows variable valency, calcium does not | | | | | | | |
|  | d) | is smaller than ion and the -electrons in ion shield the nucleus poorly | | | | | | | |
| 236. | Which of the following is most stable among and ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 237. | is the oxosalt of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 238. | Lanthanide for which +II and +III oxidation states are common is | | | | | | | |
|  | a) | La | b) |  | c) |  | d) |  |
| 239. | What would happen when as solution of potassium chromate is treated with an excess of dilute nitric acid? | | | | | | | |
|  | a) | and are formed | | | b) | and are formed | | |
|  | c) | is reduced to +3 state of Cr | | | d) | None of the above | | |
| 240. | Which are not blackend by atmospheric ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | All of these |
| 241. | on heating gives a gas which is also given by | | | | | | | |
|  | a) | Heating | b) | Heating | c) |  | d) | Na(Comp.)+ |
| 242. | In the following reaction  Catalyst is | | | | | | | |
|  | a) | Adam | b) | Ziegler-Natta | c) |  | d) | Fe/Mo |
| 243. | When is added to soluble, there is formation of as well as . Formation of is due to | | | | | | | |
|  | a) | Basic nature of solution which converts to | | | | | | | |
|  | b) | Acidic nature of solution which converts to | | | | | | | |
|  | c) | has the typical property of converting is formed to | | | | | | | |
|  | d) | No is formed | | | | | | | |
| 244. | Catalyst used in making in contact process is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 245. | Which of the following is a highly corrosive salt? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 246. | Which pair of compounds is expected to show similar colour in aqueous medium? | | | | | | | |
|  | a) | and | b) | and | c) | and | d) | and |
| 247. | Oxidation state of Fe in is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 248. | If a person is asked to prepare the blue print of a building plan, he can use | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) | is citrate | | | | | | | |
| 249. | Most oxidizing agent is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 250. | is soluble in | | | | | | | |
|  | a) | Cold water | | | b) | solution due to formation of | | |
|  | c) | Both (a) and (d) | | | d) | None of the above | | |
| 251. | The colour of light absorbed by an aqueous solution of is | | | | | | | |
|  | a) | Orange-red | b) | Blue-green | c) | Yellow | d) | Violet |
| 252. | Maximum magnetic moment is shown by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 253. | Transition elements does not show | | | | | | | |
|  | a) | Paramagetism | b) | Colour | c) | Fixed valency | d) | All of these |
| 254. | When (excess) is added to  I. II. III. | | | | | | | |
|  | a) | A white ppt of in I, a orange ppt in II and a yellow ppt in III | | | | | | | |
|  | b) | A white ppt of in I, an orange ppt. dissolving to in II, and a yellow ppt of in III | | | | | | | |
|  | c) | A white ppt of , and in each case | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 255. | Philospher’s wool on treatment with cobalt nitrate, produces | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 256. | Magnetic moment of is | | | | | | | |
|  | a) | 1.73 BM | b) | 2.83 BM | c) | 3.87 BM | d) | 4.90 BM |
| 257. | Which of the following is not a member of -transition series? | | | | | | | |
|  | a) | Fe | b) | Co | c) | Au | d) | Cu |
| 258. | The purest form of Fe is | | | | | | | |
|  | a) | Stainless steel | b) | Steel | c) | Cast iron | d) | Wrought iron |
| 259. | solution gives brown colour ring in testing nitrates or nitrite. This is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 260. | Different (variable) oxidation state is shown by transition elements. It is due to the fact | | | | | | | |
|  | a) | electrons may be excited to orbital | | | | | | | |
|  | b) | electrons may be excited to orbitals | | | | | | | |
|  | c) | -electron may get involved along with electrons in bonding | | | | | | | |
|  | d) | None of the above facts is correct | | | | | | | |
| 261. | Ag is obtained from with | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 262. | Which ore contains both iron and copper? | | | | | | | |
|  | a) | Cuprite | b) | Chalcocite | c) | Chalcopyrite | d) | Malachite |
| 263. | When is added to an acidified solution of | | | | | | | |
|  | a) | Solution turns green due to formation of | | | | | | | |
|  | b) | Solution turns yellow due to formation of | | | | | | | |
|  | c) | A deep blue-violet coloured compound is formed | | | | | | | |
|  | d) | Solution gives green ppt of | | | | | | | |
| 264. | In an atmosphere with industrial smog, Cu corrodes to | | | | | | | |
|  | a) | Basic sulphate | | | b) | Basic carbonate | | |
|  | c) | Both (a) and (b) | | | d) | None of the above | | |
| 265. | For following is not true statement | | | | | | | |
|  | a) | It is called chromic acid | | | | | | | |
|  | b) | It is colourless due to configuration | | | | | | | |
|  | c) | It is bright orange solid and colour arises due to charge transfer | | | | | | | |
|  | d) | It is toxic and corrosive | | | | | | | |
| 266. | Misch metal is | | | | | | | |
|  | a) | An alloy of lanthanide and copper | | | | | | | |
|  | b) | An alloy of lanthanide and nickel | | | | | | | |
|  | c) | An alloy of lanthanide, iron and carbon | | | | | | | |
|  | d) | An alloy of calcium and copper | | | | | | | |
| 267. | (chromite) is converted to Cr by following steps  Chromite  I, II and III are  I II III | | | | | | | |
|  | a) | C | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 268. | Which of the following mixture is chromic acid | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 269. | A transition element has a configuration , in its +3 oxidation state. Its atomic number is | | | | | | | |
|  | a) | 25 | b) | 26 | c) | 22 | d) | 19 |
| 270. | in gives bluish white ppt with . is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 271. | A jeweler is selling 22-carat gold articles with 95% purity, it is approximately | | | | | | | |
|  | a) | Exact | b) | 3.5% higher | c) | 3.5% lower | d) | 5% lower |
| 272. | Out of and , water soluble salts are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 273. | is called | | | | | | | |
|  | a) | Haematite | b) | Magnetite | c) | Casserite | d) | Dolomite |
| 274. | and both have configuration. Thus | | | | | | | |
|  | a) | Both are reducing agents | | | | | | | |
|  | b) | Both are oxidizing agents | | | | | | | |
|  | c) | is an oxidizing agent while is a reducing agent | | | | | | | |
|  | d) | is an oxidizing agent while is a reducing agent | | | | | | | |
| 275. | (trivalent actinoid ions) have configuration | | | | | | | |
|  | a) | to | b) | to | c) | to | d) | to |
| 276. | is a | | | | | | | |
|  | a) | Bronsted-Lowry acid | b) | Bronsted-Lowry base | c) | Lewis acid | d) | Lewis base |
| 277. | liberates with solution. Thus, is | | | | | | | |
|  | a) | An acidic oxide | | | b) | A basic oxide | | |
|  | c) | An amphoteric oxide | | | d) | A non-stoichiometric oxide | | |
| 278. | A blue solution of copper sulphate becomes darker when treated with excess of ammonia. This is because | | | | | | | |
|  | a) | Ammonia molecules replace water molecules in the solution | | | | | | | |
|  | b) | Ammonia is stronger ligand than water | | | | | | | |
|  | c) | Ammonia forms a stable complex ion with ions | | | | | | | |
|  | d) | All of the above are correct | | | | | | | |
| 279. | The oxidation number of Mn in the product of alkaline oxidative fusion of is | | | | | | | |
|  | a) | 2 | b) | 3 | c) | 4 | d) | 6 |
| 280. | Uranium reacts with conc. | | | | | | | |
|  | a) | To give and | | | b) | To give and | | |
|  | c) | and | | | d) | To make metal passive | | |
| 281. | Four successive members of the first row transition elements listed below with atomic numbers. Which one of them is expected to have the highest value? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 282. | Which one of the following characteristics of the transition metals is associated with their catalytic activity? | | | | | | | |
|  | a) | Colour of hydrated ions | | | b) | Variable oxidation states | | |
|  | c) | High enthalpy of atomization | | | d) | Paramagnetic behavior | | |
| 283. | The basic character of the transition metal monoxide follows the order  (Atomic number ) | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 284. | For Ni and Pt different IP in MJ are give below  6.70  Hence | | | | | | | |
|  | a) | Nickel (II) compounds tend to be thermodynamically more stable than platinum (II) | | | | | | | |
|  | b) | Platinum (IV) compounds tend to be more stable than nickel (IV) | | | | | | | |
|  | c) | Both (a) and (b) are correct | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| 285. | Silver nitrate solution is kept in brown bottles in the laboratory because | | | | | | | |
|  | a) | It reacts with ordinary bottles | | | | | | | |
|  | b) | Ordinary bottles catalyst the decomposition | | | | | | | |
|  | c) | The materials of brown bottles doo not react with it | | | | | | | |
|  | d) | Brown bottles cut the passage of light through it | | | | | | | |
| 286. | Stability of and halide complexes are in the order | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 287. | Based on the following equilibria  Select the correct statements | | | | | | | |
|  | a) | Iron in +2 state is more stable than in +3 state | | | | | | | |
|  | b) | Unstable ion can be stabilized by complexing it with a suitable ligand | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above are correct statements | | | | | | | |
| 288. | Which one of the following ionic species will impart colour to an aqueous solution? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 289. | Non-stoichiometry is shown | | | | | | | |
|  | a) | Due to variable valency of transition elements | | | | | | | |
|  | b) | Due to defects in solid structures | | | | | | | |
|  | c) | Due to both (a) and (b) | | | | | | | |
|  | d) | Due to none of the above | | | | | | | |
| 290. | Which of the following statements is not correct? | | | | | | | |
|  | a) | is less basic than | | | | | | | |
|  | b) | In lanthanide series ionic radius of ion decreases | | | | | | | |
|  | c) | La is actually an element of transition series rather lanthanide | | | | | | | |
|  | d) | Atomic radius of and are same because of lanthanide contraction | | | | | | | |

**Multiple Correct Answers Type**

| 291. | The transition metals that do not form amalgam are | | | | | | | |
|  | a) | Zn | b) | Fe | c) | Pt | d) | Cd |
| 292. | Select the correct statement(s) about complex | | | | | | | |
|  | a) | It is paramagnetic | | | b) | It is a low-spin complex | | |
|  | c) | Oxidation number of cobalt is | | | d) | The coordination number of cobalt is 6 | | |
| 293. | Select the correct statement(s) about oxides of -block elements | | | | | | | |
|  | a) | type oxides have -type structure | | | | | | | |
|  | b) | All oxides are thermodynamically stable, their heats of formation being negative | | | | | | | |
|  | c) | Oxides of the same metal in different oxidation state have different stabilities | | | | | | | |
|  | d) | The oxides are basic in low oxidation states and acidic in high oxidation states | | | | | | | |
| 294. | The species that undergoes disproportionation in an alkaline medium are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 295. | Which are correct statements? | | | | | | | |
|  | a) | In less acidic solution and gives violet coloured diamagnetic ion | | | | | | | |
|  | b) | In alkaline (with tetraperoxo species ) is formed | | | | | | | |
|  | c) | In animoniacal solution, is formed | | | | | | | |
|  | d) | changes to by oxidation | | | | | | | |
| 296. | When KCN is added to solution | | | | | | | |
|  | a) | KCN acts as a reducing agent | | | | | | | |
|  | b) | KCN acts as a complexing agent | | | | | | | |
|  | c) | Complex is formed | | | | | | | |
|  | d) | Complex is formed | | | | | | | |
| 297. | Chromium trioxide | | | | | | | |
|  | a) | Is soluble in water forming dichromate | | | | | | | |
|  | b) | Is soluble in alkali forming chromate | | | | | | | |
|  | c) | Has peroxy linkage | | | | | | | |
|  | d) | Is oxidized to by in alkali solution | | | | | | | |
| 298. | Colour of transition metal ions are due to | | | | | | | |
|  | a) | Variable valency | | | b) | transition | | |
|  | c) | Incompletely filled -orbitals | | | d) | Charge transfer | | |
| 299. | Which will not give metal on heating? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 300. | Which of the following are coloured due to charge transfer? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 301. | Reduction of the metal centre in aqueous permanganate ion involves | | | | | | | |
|  | a) | Three electrons in neutral medium | | | b) | Five electrons in neutral medium | | |
|  | c) | Three electrons in alkaline medium | | | d) | Five electrons in acidic medium | | |
| 302. | Lanthanoids are | | | | | | | |
|  | a) | 14 elements in the sixth period (atomic no. = 90 to 103) that are filling -sublevel | | | | | | | |
|  | b) | 14 elements in the seventh period (atomic no. = 90 to 103) that are filling -sublevel | | | | | | | |
|  | c) | 14 elements in the sixth period (atomic no. = 58 to 71) that are filling -sublevel | | | | | | | |
|  | d) | 14 elements in the seventh period (atomic no. = 58 to 71) that are filling -sublevel | | | | | | | |
| 303. | For following is not true statement | | | | | | | |
|  | a) | It is called chromic acid | | | | | | | |
|  | b) | It is colourless due to configuration | | | | | | | |
|  | c) | It is bright orange solid and colour arises due to charge transfer | | | | | | | |
|  | d) | It is toxic and corrosive | | | | | | | |
| 304. | Standard reduction electrode potential at is V. This means | | | | | | | |
|  | a) | is reduced to by | | | | | | | |
|  | b) | liberates with conc. Acids | | | | | | | |
|  | c) | is generally the anode in an electrochemical cell | | | | | | | |
|  | d) | Zn is generally the cathode in an electrochemical cell | | | | | | | |
| 305. | Why does aqueous ion develop intense red colour when it reacts with ion while ion does not? | | | | | | | |
|  | a) | Fe(III) ion forms a charge transfer complex with ions | | | | | | | |
|  | b) | is reduced to which is deep red in colour | | | | | | | |
|  | c) | ion is oxidized to which forms red coloured complex with ion | | | | | | | |
|  | d) | does not form any complex with ion | | | | | | | |
| 306. | Which are correct statements about ? | | | | | | | |
|  | a) | Its solution is unstable in acidic medium | | | | | | | |
|  | b) | Its small quantity added to conc. , a green coloured solution containing ions is formed | | | | | | | |
|  | c) | changes to in basic solution | | | | | | | |
|  | d) | It is self-indicator in or titration | | | | | | | |
| 307. | Which of the following chemical reactions is/are involved in the developing of photographic plate? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 308. | When is passed into aqueous | | | | | | | |
|  | a) | solution, its yellow colour changes to orange | | | | | | | |
|  | b) | solution, it disproportionate to and | | | | | | | |
|  | c) | solution, its orange colour changes to green | | | | | | | |
|  | d) | solution, its pink colour changes to green | | | | | | | |
| 309. | Electron transfer from to is likely to occur | | | | | | | |
|  | a) | - transition | | | b) | Inner sphere electron transfer | | |
|  | c) | mechanism | | | d) | Outer sphere electron transfer | | |
| 310. | on heating gives | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 311. | Which of the following halides react(s) with to give a precipitate that dissolves in ? | | | | | | | |
|  | a) |  | b) | FF | c) |  | d) |  |
| 312. | Select the correct statement(s) | | | | | | | |
|  | a) | When solution is added to solution, in addition to , is also formed due to side redox reaction | | | | | | | |
|  | b) | When solution is added to solution, in addition to is also formed due to side redox reaction | | | | | | | |
|  | c) | is paramagnetic while is diamagnetic | | | | | | | |
|  | d) | is diamagnetic while is paramagnetic | | | | | | | |
| 313. | Select the correct statement(s) | | | | | | | |
|  | a) | Stabilities of variable oxidation states can be explained by standard electrode potential | | | | | | | |
|  | b) | is unstable and is stable in aqueous solution | | | | | | | |
|  | c) | is stable and is unstable in aerated water | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| 314. | gas can be obtained by heating | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assertion - Reasoning Type** | | | |
| This section contain(s) 0 questions numbered 315 to 314. Each question containsstatement 1(Assertion) and statement 2(Reason). Each question has the 4 choices (a), (b), (c) and (d) out of which **only one** is correct. | | | |
|  | a) | Statement 1 is True, Statement 2 is True; Statement 2 **is** correct explanation for Statement 1 | |
|  | b) | Statement 1 is True, Statement 2 is True; Statement 2 **is not** correct explanation for Statement 1 | |
|  | c) | Statement 1 is True, Statement 2 is False | |
|  | d) | Statement 1 is False, Statement 2 is True | |

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| 315 |  | | |
|  | **Statement 1:** | | on heating to loses all the five molecules and becomes anhydrous |
|  | **Statement 2:** | | All the five molecules are coordinated to the central ion |

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| --- | --- | --- | --- |
| 316 |  | | |
|  | **Statement 1:** | | Oxalates and carbonates of lanthanides are almost insoluable in water |
|  | **Statement 2:** | | Salts of lanthanides usually contains water of crystallisation |

|  |  |  |  |
| --- | --- | --- | --- |
| 317 |  | | |
|  | **Statement 1:** | | Mercury is liquid at room temperature |
|  | **Statement 2:** | | In mercury, there is no unpaired -electron and thus, metallic bonding is weakest |

|  |  |  |  |
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| 318 |  | | |
|  | **Statement 1:** | | Chromium is hard but mercury is soft. |
|  | **Statement 2:** | | Chromium is a 3d transition elements. |

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| --- | --- | --- | --- |
| 319 |  | | |
|  | **Statement 1:** | | Equivalent mass of is equal to one third of its molecular mass when it acts as an oxidising agent in an alkaline medium |
|  | **Statement 2:** | | Oxidation number of Mn is +7 in |

|  |  |  |  |
| --- | --- | --- | --- |
| 320 |  | | |
|  | **Statement 1:** | | Magnetic moments values of actinides are lesser than the theoretically predicted values. |
|  | **Statement 2:** | | Actinide elements are strongly paramagnetic. |

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| 321 |  | | |
|  | **Statement 1:** | | Tungsten has the highest melting point |
|  | **Statement 2:** | | Tungsten is a covalent compound |

|  |  |  |  |
| --- | --- | --- | --- |
| 322 |  | | |
|  | **Statement 1:** | | Mercury vapour is shining silvery in appearance. |
|  | **Statement 2:** | | Mercury is a metal with shining silvery appearance. |

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| --- | --- | --- | --- |
| 323 |  | | |
|  | **Statement 1:** | | Europium(II) is more stable than cerium(II). |
|  | **Statement 2:** | | Cerium salts are used as a catalyst in petroleum cracking. |

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| --- | --- | --- | --- |
| 324 |  | | |
|  | **Statement 1:** | | The free gaseous Cr atom has six unpaired electrons. |
|  | **Statement 2:** | | Half filled s- orbital has greater stability. |

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| **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**. | | | | | | | | | |

| 325. | Match the neutral coordination compounds (in Column I) with metals therein (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Nitrogenases | | (1) | | Cu | |
|  | **(B)** | Cytochrome oxidase | | (2) | | Mo | |
|  | **(C)** | Cytochrome C | | (3) | | Zn | |
|  | **(D)** | Carboxy peptidase | | (4) | | Fe | |
|  | **CODES :** | | | | | | | |

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

| 326. | Match the alloys (in Column I) with their constituents (in Column II) | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Invar | | (1) | |  | |
|  | **(B)** | Brass | | (2) | |  | |
|  | **(C)** | Monel | | (3) | |  | |
|  | **(D)** | Coinage metal | | (4) | |  | |
|  | **(E)** | Nichrome | | (5) | |  | |
|  | **CODES :** | | | | | | | |

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

| 327. | Match the compounds in Column I with their uses in Column II | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | Metallurgical extraction of Ag | |
|  | **(B)** |  | | (2) | | Electrode | |
|  | **(C)** |  | | (3) | | Luminous paints | |
|  | **(D)** |  | | (4) | | Lithopone | |
|  | **CODES :** | | | | | | | |

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

| 328. | Match List I with List II and select the correct answer using the codes given below the lists. | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | |  | |
|  | **(B)** |  | | (q) | |  | |
|  | **(C)** |  | | (r) | |  | |
|  | **(D)** |  | | (s) | |  | |
|  |  |  | | (t) | |  | |
|  | **CODES :** | | | | | | | |

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

| 329. | Match the complex ion (Column I) with its spin-only magnetic moment (Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | 1.73 BM | |
|  | **(B)** |  | | (2) | | 5.92 BM | |
|  | **(C)** |  | | (3) | | 0.0 BM | |
|  | **(D)** |  | | (4) | | 2.83 BM | |
|  | **CODES :** | | | | | | | |

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

| 330. | Match the lanthanide ions (, in Column I) with their calculated magnetic moments (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | 7.94 BM | |
|  | **(B)** |  | | (2) | | 4.90 BM | |
|  | **(C)** |  | | (3) | | 1.73 BM | |
|  | **(D)** |  | | (4) | | 3.87 BM | |
|  | **CODES :** | | | | | | | |

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

| 331. | Match the catalysts in Column I with their uses in Column II | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | Adams catalyst in reduction | |
|  | **(B)** |  | | (2) | | In preparation of | |
|  | **(C)** |  | | (3) | | Reppe synthesis | |
|  | **(D)** | Cu | | (4) | | Used as the Natta catalyst in polythene production | |
|  | **(E)** | Ni | | (5) | | Wake process for converting to | |
|  | **CODES :** | | | | | | | |

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

| 332. | Match the species in Column I that can react (oxidize, reduce, give ppt) species in Column II | | | | | | | | |

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

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

| 333. | Match the alloys (in Column I) with their constituents (in Colum II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Invar | | (1) | |  | |
|  | **(B)** | Brass | | (2) | |  | |
|  | **(C)** | Monel | | (3) | | 36% Ni | |
|  | **(D)** | Coinage metal | | (4) | |  | |
|  | **(E)** | Nicrome | | (5) | |  | |
|  | **CODES :** | | | | | | | |

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

| 334. | Match the alloys (in Column I) with the constituents metal (in Column II) | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Gun metal | | (1) | |  | |
|  | **(B)** | German silver | | (2) | |  | |
|  | **(C)** | Brass | | (3) | |  | |
|  | **(D)** | Solder | | (4) | |  | |
|  | **CODES :** | | | | | | | |

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

| 335. | Match the underlined atoms in Column I with oxidation number in Column II | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | 1 | |
|  | **(B)** |  | | (2) | | 2 | |
|  | **(C)** |  | | (3) | | 3 | |
|  | **(D)** |  | | (4) | | 6 | |
|  | **(E)** |  | | (5) | | 7 | |
|  | **CODES :** | | | | | | | |

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

| 336. | Match the compounds of Column I with oxidation state of Column II | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (1) | | 5 | |
|  | **(B)** |  | | (2) | | 4 | |
|  | **(C)** |  | | (3) | | 6 | |
|  | **(D)** |  | | (4) | | 3 | |
|  | **CODES :** | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Linked Comprehension Type**  This section contain(s) 20 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. 337 to -337** | | | | | | | | |
| The colour of the compounds of transition metals may be attributed to the presence of incomplete n-1d sunshell. When an electron from a lower energy of d-orbital is excited to a higher energy d-orbital, the energy of excitation corresponds to the frequency of light absorbed. This frequency generally lies in the visible region. The colour observed. The frequency to complementary colour of the light absorbed. The frequency of the light absorbed is determined by the nature of the ligand. Paramagnetism is a property due to the presence of unpaired electrons. Paramagnetism increases with increase in number of unpaired electrons. Magnetism moment is calculated from the formulaμ=n(n+2) BM | | | | |

| 337. | The colourless species is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 338 to - 338** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| The first triad metals iron, cobalt and nickel are known as ferrous metals. Iron and cobalt exhibit oxidation states +3 and +2 in their compounds, while nickel compounds are generally in the +2 oxidation state. The elements of the second and third triad are collectively known as platinum metals. These elements give halides having metals in divalent as well as trivalent states | | | | |

| 338. | The maximum oxidation state exhibited by manganese is | | | | | | | |
|  | a) | +3 | b) | +7 | c) | +4 | d) | +6 |
| **Paragraph for Question Nos. 339 to - 340** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| From the data given in the table, answer the following questionsCovalent radii of the Transition Elements (pm)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn203 174 144 132 122 117 117 117 116 115 117 125 Zr Nb 145 134 Ht Ta 144 134\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |

| 339. | Atoms of the transition elements are similar than those of the -block elements. This is because of | | | | | | | |
|  | a) | Usual contraction in size across a horizontal period | | | | | | | |
|  | b) | Orbital electrons added to the penultimate -shell rather than to the outer shell of the atom | | | | | | | |
|  | c) | Both (a) and (b) | | | | | | | |
|  | d) | None of the above | | | | | | | |
| **Paragraph for Question Nos. 340 to - 341** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following short write-up and answer the questions given“The transition elements have an unparalleled tendency to form coordination compound with Lewis base that is with groups which are able to donate an electron pair (called ligands)” | | | | |

| 340. | The tendency to form complexes by transition metal compared to and -block elements is due to | | | | | | | |
|  | a) | Their smaller size | | | | | | | |
|  | b) | Higher nuclear charge | | | | | | | |
|  | c) | Presence of low energy vacant orbitals to accept lone pair of electrons donated by ligands | | | | | | | |
|  | d) | All of the above | | | | | | | |
| **Paragraph for Question Nos. 341 to - 342** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Taking into account the following experimental fact answer the questions given at the end“When metallic copper is heated with concentrated sulphuric acid, in addition to copper(II) sulphate and sulphur dioxide, some copper (II) sulphide is also formed” | | | | |

| 341. | In which reaction, is formed? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | In all of these |
| **Paragraph for Question Nos. 342 to - 343** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following short write-up and answer the questions given at the endRecent X-ray work, IR and other spectroscopic methods have proved that Turnbull’s blue is identical to Prussian blue | | | | |

| 342. | What is the common formula of Turnbull’s blue and Prussian blue? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 343 to - 343** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Based on the following statements answer the questions given at the endStatement The mercurous ion is written as Hg22+ while the cuprous ion is written as Cu+Statement Cu+ is d10 ion and colourless but Cu2O is red and Cu2S is black | | | | |

| 343. | Mercurous ion is written as because | | | | | | | |
|  | a) | Magnetic moment of mercurous ion is zero and thus, unpaired electron has been used in bonding to make | | | | | | | |
|  | b) | In aqueous solution two ions are solvated forming | | | | | | | |
|  | c) | disproportionates to and Hg | | | | | | | |
|  | d) | None of the above is correct | | | | | | | |
| **Paragraph for Question Nos. 344 to - 344** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Based on the following experimental facts answer the questions given at the end“Green solution of potassium manganate (VI), turns purple and a brown solid is precipitated when CO2 is bubbled into the solution” | | | | |

| 344. | Purple colour is due to formation of | | | | | | | |
|  | a) | Manganese dioxide (IV) | | | b) | Potassium permanganate (VII) | | |
|  | c) | Manganese (II) ion | | | d) | None of the above | | |
| **Paragraph for Question Nos. 345 to - 345** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following passage and answer the questions at the end of itWhen a piece of iron is dipped in conc. HNO3, a slight reaction takes place which then ceases completely. There is no change in the appearance of the iron, but this does not displace Cu from CuSO4 solution which is however a common property of Fe. This behavior is also observed with Cr and Al when in contact with HNO3 | | | | |

| 345. | Above phenomenon is called | | | | | | | |
|  | a) | Corrosion | b) | Rusting | c) | Passivity | d) | Reduction |
| **Paragraph for Question Nos. 346 to - 346** | | | | | | | | |

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| --- | --- | --- | --- | --- |
| Based on the following qualitative test of chromium, answer the questions given at the end of itIn qualitative analysis, a confirmatory test for chromium involves the formation of a blue transient peroxo species, CrO5. It is formed when H2O2 is added to on acidic solution containing Cr2O72- | | | | |

| 346. | Select the correct statement about | | | | | | | |
|  | a) | It has two types of oxygen-peroxide and oxide | | | | | | | |
|  | b) | Oxidation number of Cr is +10 | | | | | | | |
|  | c) | It is formed by oxidation of | | | | | | | |
|  | d) | All of the above are correct statements | | | | | | | |
| **Paragraph for Question Nos. 347 to - 347** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Read the following observation and answer the questions given at the endIn an atmosphere with industrial smog, Cu corrode to a basic sulphate Cu2OH2SO4 and basic carbonate Cu2OH2CO3 | | | | |

| 347. | Basic sulphate is generally formed during acid rain with a reaction | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) | All of the above | | |

**Integer Answer Type**

| 348. | When is treated with and KOH, a red-brown compound is formed | | | | | | | |
| 349. | Complex when dimethyl-glyoxime (in alcohol) added to ammoical nickel chloride solution | | | | | | | |
| 350. | 2.78 g of on treatment with excess of solution gives 2.33 g of white precipitate of . What is value of ? | | | | | | | |
| 351. | How many oxygen atoms are directly attached to one chromium in dichromate ion? | | | | | | | |
| 352. | Complex when is added to solution | | | | | | | |
| 353. | Magnetic moment of in is 5.91 BM. Thus is has …… electrons in -orbitals | | | | | | | |
| 354. | What is the serial number of the colour formed when is made alkaline?  V I B G Y O R  1 2 3 4 5 6 7 | | | | | | | |
| 355. | How many molecules are in coordination sphere in | | | | | | | |
| 356. | When is treated with and , a red-brown compound is formed. is …… | | | | | | | |
| 357. | 2.67 g of (molar mass ) in aqueous solution gave 4.305 g of white precipitate of (molar mass ). On reaction with excess of solution. Thus, atoms in outer sphere of the complex is…… | | | | | | | |
| 358. | has…… peroxy linkage(s) | | | | | | | |
| 359. | How many of the following are amphoteric? | | | | | | | |
| 360. | How many of the following pairs have approximately equal radii? | | | | | | | |
| 361. | How many of the following also forms dimer? | | | | | | | |
| 362. | There are 24 electron in  How many of these have configuration? | | | | | | | |
| 363. | Compound when gas is passed into acidified solution | | | | | | | |
| 364. | What is van’t Hoff factor of if it is 100% ionized in aqueous solution? | | | | | | | |
| 365. | Compounds when solution is made alkaline | | | | | | | |
| 366. | Complex when is added to solution | | | | | | | |
| 367. | Complex when is added to solution | | | | | | | |
| 368. | Compound when gas is passed into solution | | | | | | | |
| 369. | (23 electrons) has…… electrons in ( orbitals | | | | | | | |
| 370. | How many mole(s) of are precipitated per mole of on reaction with excess ? | | | | | | | |
| 371. | What is the sum of oxidation number of iron in Prussian blue? | | | | | | | |
| 372. | How many of the following are paramagnetic a well as coloured species? | | | | | | | |
| 373. | Compound when is treated with KI and then titrated with solution | | | | | | | |
| 374. | Number of oxygen atom(s) between two chromium atoms in is….. | | | | | | | |
| 375. | How many of the following pairs have approximately equal radii  (), | | | | | | | |
| 376. | Maximum oxidation state shown by manganese is….. | | | | | | | |
| 377. | How many of the following have underlined atoms in different oxidation states? | | | | | | | |
| 378. | How many of the following use outer -orbital in complex formation? | | | | | | | |
| 379. | Compound when solution is made acidic | | | | | | | |
| 380. | (24 electrons) has…… electrons in -orbitals | | | | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 505**

**Time :** 20:39:00 **CHEMISTRY**

**Marks :** 1219

8.THE D-AND F-BLOCK ELEMENTS

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1) a 2) c 3) b 4) d**  **5) c 6) a 7) b 8) c**  **9) d 10) a 11) d 12) a**  **13) b 14) d 15) c 16) d**  **17) a 18) a 19) c 20) a**  **21) d 22) b 23) c 24) c**  **25) b 26) b 27) c 28) a**  **29) d 30) d 31) a 32) a**  **33) c 34) a 35) c 36) c**  **37) c 38) d 39) a 40) d**  **41) b 42) b 43) a 44) c**  **45) b 46) a 47) d 48) a**  **49) b 50) b 51) b 52) a**  **53) b 54) d 55) c 56) a**  **57) c 58) c 59) b 60) a**  **61) d 62) d 63) a 64) a**  **65) b 66) d 67) b 68) a**  **69) a 70) c 71) c 72) b**  **73) a 74) c 75) a 76) b**  **77) a 78) a 79) d 80) c**  **81) a 82) c 83) c 84) b**  **85) d 86) c 87) c 88) d**  **89) d 90) a 91) b 92) a**  **93) d 94) d 95) c 96) b**  **97) a 98) c 99) b 100) d**  **101) b 102) b 103) a 104) a**  **105) b 106) b 107) c 108) b**  **109) b 110) a 111) c 112) b**  **113) a 114) b 115) d 116) b**  **117) a 118) b 119) a 120) a**  **121) b 122) c 123) d 124) b**  **125) c 126) b 127) a 128) a**  **129) b 130) c 131) c 132) c**  **133) c 134) c 135) a 136) c**  **137) b 138) a 139) a 140) b**  **141) a 142) d 143) a 144) b**  **145) d 146) c 147) b 148) d**  **149) d 150) c 151) c 152) d**  **153) c 154) c 155) b 156) c**  **157) b 158) a 159) a 160) c**  **161) a 162) b 163) c 164) d**  **165) b 166) d 167) c 168) c**  **169) d 170) c 171) d 172) c**  **173) b 174) b 175) c 176) a**  **177) c 178) b 179) b 180) b**  **181) c 182) b 183) b 184) a**  **185) b 186) d 187) b 188) d**  **189) d 190) b 191) b 192) b**  **193) c 194) a 195) c 196) d**  **197) c 198) c 199) b 200) d**  **201) b 202) c 203) d 204) d**  **205) d 206) d 207) c 208) c**  **209) c 210) a 211) d 212) d**  **213) b 214) a 215) a 216) b**  **217) c 218) b 219) d 220) c**  **221) b 222) b 223) d 224) a**  **225) a 226) c 227) c 228) d**  **229) d 230) b 231) c 232) b**  **233) d 234) c 235) d 236) a**  **237) b 238) d 239) b 240) d**  **241) a 242) b 243) b 244) a**  **245) d 246) b 247) d 248) a**  **249) b 250) b 251) a 252) a**  **253) c 254) b 255) b 256) a**  **257) c 258) d 259) a 260) c**  **261) b 262) c 263) c 264) c**  **265) b 266) c 267) b 268) c**  **269) a 270) a 271) b 272) c**  **273) b 274) d 275) b 276) c**  **277) a 278) d 279) d 280) d**  **281) d 282) b 283) b 284) c**  **285) d 286) a 287) c 288) d**  **289) c 290) a 1) b,c 2) a,d 3) a,b,c,d 4) b,c**  **5) a,b,c 6) a,b,c 7) a,b,d 8) b,c,d**  **9) b,d 10) a,b 11) c,d 12) c**  **13) b 14) c 15) a 16) a,b,d**  **17) b,d 18) a,b 19) b 20) a,b,c**  **21) a,c,d 22) a,b,d 23) a,b 24) a,b**  **1) c 2) a 3) a 4) b**  **5) b 6) b 7) c 8) d**  **9) b 10) c 1) b 2) a 3) a 4) c**  **5) b 6) c 7) d 8) a**  **9) a 10) a 11) c 12) b**  **1) a 2) b 3) c 4) d**  **5) a 6) c 7) a 8) b**  **9) c 10) a 11) b 1) 4 2) 9 3) 7 4) 4**  **5) 7 6) 5 7) 5 8) 4**  **9) 8 10) 3 11) 2 12) 5**  **13) 6 14) 3 15) 2 16) 4**  **17) 3 18) 5 19) 2 20) 8**  **21) 1 22) 0 23) 1 24) 5**  **25) 7 26) 0 27) 1 28) 6**  **29) 7 30) 5 31) 2 32) 6**  **33) 6** | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 20-08-2019 **TEST ID: 505**

**Time :** 20:39:00 **CHEMISTRY**

**Marks :** 1219

8.THE D-AND F-BLOCK ELEMENTS

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | **(d)** | | | | | | | |
| 9 | **(d)**  white black | | | | | | | |
| 11 | **(d)** | | | | | | | |
| 17 | **(a)** | | | | | | | |
| 20 | **(a)** | | | | | | | |
| 21 | **(d)**  In alkaline solution, is reduced to (black)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Hence, of are reduced to by 1 mole of KI | | | | | | | |
| 23 | **(c)**  Nascent H reduces NO to which changes to | | | | | | | |
| 31 | **(a)**  The methods chiefly used for the extraction of lead and tin from their ores are respectively self reduction and carbon reduction. (Because the process of heating the ore strongly in the presence of excess of air is called roasting. It is mainly used in case of sulphide ores and the process of extracting a metal by fusion of the oxide ore with carbon is known as smelting.) | | | | | | | |
| 35 | **(c)**  forms soluble complex with oxalic acid | | | | | | | |
| 42 | **(b)**  is white | | | | | | | |
| 49 | **(b)**  stable | | | | | | | |
| 50 | **(b)**  As oxidation state increases, electronegativity increases thus acidic characteristic increases not basic. | | | | | | | |
| 51 | **(b)**     |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   has two unpaired electrons in and thus - transition is possible due to absorption of light in visible region | | | | | | | |
| 52 | **(a)** | | | | | | | |
| 53 | **(b)**  all electrons paired | | | | | | | |
| 56 | **(a)** | | | | | | | |
| 58 | **(c)**  Non-oxidising acids (as ) dissolve basic and emphoteric oxides, e.g.,  is hydrated in aqueous solution existing as | | | | | | | |
| 63 | **(a)**  purple colour | | | | | | | |
| 64 | **(a)** | | | | | | | |
| 68 | **(a)** | | | | | | | |
| 83 | **(c)** | | | | | | | |
| 84 | **(b)**  This is due to increasing stability of the lower species to which they are reduced    Oxidation state +5 +6 +7 | | | | | | | |
| 91 | **(b)**  Cherry red ppt | | | | | | | |
| 93 | **(d)** | | | | | | | |
| 94 | **(d)** | | | | | | | |
| 96 | **(b)**  (acidic) | | | | | | | |
| 105 | **(b)**  cobalt is +2 with three unpaired electrons in . Thus, | | | | | | | |
| 109 | **(b)**  Zinc blende is roasted and then treated with coke for the reduction. | | | | | | | |
| 113 | **(a)** | | | | | | | |
| 114 | **(b)**  Colour of transition metal ion salt is due to transition of unpaired electrons of -orbital. Metal ion salt having similar number of unpaired electrons in -orbitals shows similar colour in aqueous medium.  In vanadium is present as and in , copper is present as .  So, 23V=     |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  |   Number of unpaired electrons =1  and 29Cu =     |  |  |  |  |  | | --- | --- | --- | --- | --- | | ⥮ | ⥮ | ⥮ | ⥮ |  |   Number of unpaired electron =1  Hence, and show similar colour. | | | | | | | |
| 116 | **(b)**  (violet) | | | | | | | |
| 125 | **(c)**  Oxidation state of Fe is +2 and is ligand | | | | | | | |
| 131 | **(c)** | | | | | | | |
| 140 | **(b)** | | | | | | | |
| 142 | **(d)**  Fe(III) gives red colours with | | | | | | | |
| 148 | **(d)**  (three unpaired electrons)     |  |  |  |  |  | | --- | --- | --- | --- | --- | | ⥮ |  |  |  |  |      |  |  |  |  |  | | --- | --- | --- | --- | --- | | ⥮ | ⥮ |  |  |  |   Magnetic moment | | | | | | | |
| 149 | **(d)**  Third electron which is removed in third ionization potential enthalpy belongs to subshell in V  In  Third electron which is removed in third ionization potential enthalpy belongs to subshell  Third electron which is removed in third ionization potential enthalpy belongs to subshell  Third electron which is removed in third ionization potential belongs to subshell  In all elements shell and subshells are same. Required amount of energy is based upon the stability of -subshell. Hence, shows highest third ionization potential or enthalpy | | | | | | | |
| 155 | **(b)**  6 electrons for two  3 electrons per Cr | | | | | | | |
| 161 | **(a)** | | | | | | | |
| 162 | **(b)**  Ferromagnetism is permanent magnetism in the atom/ion. It is due to unpaired electrons   |  |  |  |  |  | | --- | --- | --- | --- | --- | | ⥮ |  |  |  |  |      |  |  |  |  |  | | --- | --- | --- | --- | --- | | ⥮ | ⥮ |  |  |  |        |  |  |  |  |  | | --- | --- | --- | --- | --- | | ⥮ | ⥮ | ⥮ |  |  | | | | | | | | |
| 163 | **(c)**  Magnetic moment  Where, unpaired electrons          Thus, | | | | | | | |
| 167 | **(c)**  Ion is coloured if there are unpaired electrons in -suborbit  Paramagnetic nature is also due to unpaired electrons  Thus, every coloured ion is also paramagnetic  one unpaired electron in  ; five unpaired  electrons in | | | | | | | |
| 169 | **(d)**  (black) | | | | | | | |
| 170 | **(c)**  Fe has 4 unpaired electrons | | | | | | | |
| 172 | **(c)**  charges to or in basic medium | | | | | | | |
| 173 | **(b)**  white grey | | | | | | | |
| 183 | **(b)**  +6 +4 +6 +3 | | | | | | | |
| 186 | **(d)**     |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | | | | | | | | |
| 189 | **(d)** | | | | | | | |
| 192 | **(b)** | | | | | | | |
| 195 | **(c)** | | | | | | | |
| 198 | **(c)**  In , ion exist, having configuration. Unpaired electron causes colour ( transition). In the crystalline form, is blue coloured. | | | | | | | |
| 199 | **(b)**  Metals lying above H in electrochemical series are not obtained from their oxides by heating | | | | | | | |
| 201 | **(b)**  Generally salts are colourless due to -configuration | | | | | | | |
| 210 | **(a)**  When  is oxidised by in alkaline medium  converts into . | | | | | | | |
| 213 | **(b)**    Both are stable configuration and removal of next electron requires very high energy. Thus, second IE is very high  Second electron is removed for  subshell, thus, second IE is  low | | | | | | | |
| 216 | **(b)** | | | | | | | |
| 230 | **(b)**  In this base is formed | | | | | | | |
| 233 | **(d)**  No unpaired electron, thus | | | | | | | |
| 236 | **(a)** | | | | | | | |
| 239 | **(b)** | | | | | | | |
| 241 | **(a)**  Ammounium dichromate on heating gives gas which is also given by heating of . | | | | | | | |
| 243 | **(b)** | | | | | | | |
| 252 | **(a)**  Maximum unpaired electrons   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | | | | | | | | |
| 254 | **(b)**  I.  White ppt  II.  Orange ppt  soluble  III.  Yellow ppt | | | | | | | |
| 259 | **(a)**  Ring is formed by charge transfer | | | | | | | |
| 262 | **(c)**  Ore Chemical composition  In these ores, chalcopyrite () Contains both iron and copper. | | | | | | | |
| 271 | **(b)**  24 carat gold is 100%  Thus, 22-carat gold is 91.67%  Thus, 3.5% higher | | | | | | | |
| 274 | **(d)**      Extra stability is gained when is reduced to and is thus an oxidizing agent | | | | | | | |
| 279 | **(d)**  Oxidation number of Mn in is | | | | | | | |
| 281 | **(d)**  increases left to right | | | | | | | |
| 286 | **(a)**  Larger anion stabilizes to a greater extent | | | | | | | |
| 287 | **(c)**  , it means forward equilibria are not spontaneous  Thus, is more stable than  In oxidation number of  and in oxidation number of  Due to complex ion, decreases, thus stability can be increased by complexing ion | | | | | | | |
| 291 | **(b,c)**  On heating gives | | | | | | | |
| 294 | **(b,c)**  and undergo disproportionation, , oxidation and reduction of same element simultaneously, in the alkaline medium  is stable in strong alkali solution and disproportionate into and in less basic, acidic and neutral medium | | | | | | | |
| 298 | **(b,c,d)**  Transition metals show colour due transition, charge transfer and incompletely filled -orbitals | | | | | | | |
| 307 | **(b,d)**  Following reactions are involved in developing the photographic plate  quinol(developer) quinine(developing)  (soluble)  (fixing the image) | | | | | | | |
| 310 | **(a,b,c)**  The transition metals that do not form amalgams with Hg are Fe and Pt | | | | | | | |
| 315 | **(c)**    One water molecular is hydrogen bonded to coordinated water molecules and ion and remaining four are coordinated to the central ion | | | | | | | |
| 316 | **(a)**  The solubility of many salts of lanthanides follows the pattern of group II elements | | | | | | | |
| 317 | **(a)**  Statement II is the correct explanation of statement I | | | | | | | |
| 318 | **(b)**  Chromium has maximum number of unpaired *d-*electrons. While Hg does not have any unpaired *d-*electron. | | | | | | | |
| 319 | **(b)**  In alkaline medium, is reduced to which involves  Thus, its eq. wt | | | | | | | |
| 320 | **(b)**  The magnetic moments are lesser than the theoretically predicted values. This is due to the fact that 5*f* electrons of actinides are less effectively shielded which results in quenching of orbital contribution. | | | | | | | |
| 322 | **(d)**  Both assertion and reason are false. Mercury vapour are visible as no metallic bounding is possible in vapour state. | | | | | | | |
| 323 | **(b)**  (more stable) | | | | | | | |
| 324 | **(c)**  The free gaseous Cr atom has six unpaired electrons due to following electronic configuration This is because half filled d-orbitals are more stable than incompletely filled *d*-orbitals. So, one electron jumps from to 3*d* orbital. | | | | | | | |
| 328 | **(c)** | | | | | | | |
| 337 | **(a)**  contains V in +5 oxidation state, which has all -orbitals vacant and thus, colourless | | | | | | | |
| 338 | **(b)**  Mn has outer electronic configuration. Therefore, by losing all and -elelctrons, the maximum oxidation state achieved is +7 | | | | | | | |