

કુલ સમય :- ૬૦ મીનીટ

કુલ પ્રશ્નો : ૫૦

વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

- The Porphyrins are macro cyclic _____ systems.
(a) tetra pyrrole (b) tetra pyridine (c) Tetra furan (d) Tetra thyophin
- Which of the following sentence is True?
(a) Rubredoxinase is found in anaerobic bacteria (b) Iron sulphur proteins have relatively low molecular weight
Fe-S distances are observed in Rubredoxin from 2.24 to 2.33Å. All
- Which of the following does not belong to Fe-S protein?
(a) Hemoglobin (b) Rubredoxin (c) Ferredoxin (d) All
- Which of the following is reduced form?
(a) NADH (b) NAD⁺ (c) Both (d) None
- Nicotinamide adenine dinucleotide (NAD) and flavin adenine dinucleotide (FAD) are agents for the_____
(a) Storage of electrons in metabolic oxidations and reductions (b) Transport of electrons in metabolic oxidations and reductions
(c) Both (d) None
- The structure of the various biological proteins can be determined using_____ technique.
(a) Raman (b) IR (c) Microwave (d) X-ray
- Cytochromes are generally useful for _____
(a) Neutron transfer (b) Electron transfer (c) Proton transfer (d) None
- Haemoglobin and Myoglobin have_____and_____Fe centers respectively.
(a) 2,3 (b) 4,1 (c) 2,2 (d) 3,3
- Hemocyanin contains_____metal atoms.
(a) Mo (b) Pb (c) Cu (d) W
- Chromium metal is found in_____enzyme
(a) Glucose tolerance factor (b) Cytochrome C (c) Haemoglobin (d) Cynocobalmin
- Wilkinson catalyst has_____center metal atom
(a) W (b) Fe (c) Re (d) Rh
- _____and_____ facilitate oxygen transport and oxygen storage.
(a) Ceruloplasmin, Nitrite reductase (b) Superoxide dismutase, Ceruloplasmin
(c) Haemoglobin, Myoglobin (d) Myoglobin, Haemoglobin
- Hemerythrin is_____protein
(a) Monomeric (b) Oligomeric (c) Polymeric (d) All
- _____has not porphyrin ring
(a) Haemoglobin (b) Myoglobin (c) Hemerythrin (d) None
- Deoxyhemerythrin is_____spin complex
(a) High (b) Low (c) Both (d) None
- What will be the change shown by metal ion in oxidative addition process?
(a) Increase the oxidation state of metal ion (b) Increase the coordination number of metal
(c) Both (d) None
- Carboxylation is_____
(a) Reaction in which CO is reacted with substance in presence of water or alcohol
(b) Reaction in which CO₂ is reacted with substance in presence of water
(c) Reaction in which -CHO is reacted with substance in presence of water
(d) None
- Which element is considered as transuranic element/s?
(a) Bk (b) Md (c) Am (d) All
- Which of the following statement is false for Neptunium?
(a) Neptunium was named for the planet Neptune
(b) Neptunium was discovered by Edwin McMillan and Philip H. Abelson in 1940
(c) It has three forms of crystal, orthorhombic, tetragonal and cubic
(d) It is diamagnetic in nature
- What is the electronic configuration of Plutonium?
(a) [Rn] 5f⁵7s² (b) [Rn] 5f⁶7s² (c) [Rn] 5f⁸7s² (d) [Xe] 5f⁹7s²
- Write a True and False
(i) Plutonium has six allotropes and four different oxidation states
(ii) Plutonium is located right to neptunium and left to Americium in modern periodic table
(iii) Half life time of the ²³⁹Pu is 2.42 minutes
(iv) Plutonium was used in Second World War in the atomic bomb
(a) TTTT (b) FFFT (c) TTTF (d) TTFT
- Which element is produced when ²³⁸U captures neutron and emits beta particle?
(a) ²³⁹Np (b) ²³⁸Np (c) ²³⁹Pu (d) ²³⁹Am

23. What are A and C in the following reaction?
 ${}_{94}\text{Pu}^{239} + (2n, \gamma) \square \text{A} - \beta^- \square_x \text{Am}^y - \beta^- \square \text{C}$
 (a) ${}_{94}\text{Pu}^{240}$, ${}_{96}\text{Cm}^{240}$ (b) ${}_{94}\text{Pu}^{241}$, ${}_{96}\text{Cm}^{241}$ (c) ${}_{95}\text{Am}^{241}$, ${}_{96}\text{Cm}^{241}$ (d) ${}_{95}\text{Am}^{241}$, ${}_{96}\text{Cm}^{243}$
24. Which of the following is true for Curium (Cm) element?
 (a) It was discovered by Marie and Pierre Curie (b) It is fifth transuranic element
 (c) It is Paramagnetic in nature (d) All
25. If ${}_5\text{B}^{11}$ is bombarded with ${}_{92}\text{U}^{235}$, what will be the product?
 (a) ${}_{98}\text{Cf}^{246}$ (b) ${}_{97}\text{Cf}^{246}$ (c) ${}_{97}\text{Bk}^{246}$ (d) ${}_{98}\text{Cf}^{240}$
26. Radioactive isotopes can be produced by_____
 (a) By emitting 1- α and 2- β (b) By emitting 2- α and 2- β (c) By emitting 2- α and 1- β (d) By emitting 1- α and 1- β
27. What are the atomic numbers of Og, Ts, Nh?
 (a) 118,117,113 (b) 113,114,115 (c) 114,115,116 (d) 113,117,118
28. Which of the following compound of uranium is known as Yellow Cake ?
 (a) U_3O_8 (b) $\text{U}(\text{NO}_3)_2$ (c) UO_2SO_4 (d) UCl_2
29. Which of the following is not considered as organometallic compound?
 (a) Ethyl Magnesium Bromide (b) Tetra Ethyl Lead (c) Sodium Ethoxide (d) Tetra Methyl Aluminium
30. Which of the following compound contains Cobalt?
 (a) hemoglobin (b) Myoglobin (c) Vitamin B-12 (d) All
31. Porphyrin ring has _____pi-electrons.
 (a) 20 (b) 25 (c) 22 (d) 24
32. Cytochromes are known as_____
 (a) Redox intermediates (b) Base intermediates (c) Both (d) None
33. Cytochrome c oxidase contains_____metal center along with Iron metal
 (a) Mo (b) Ni (c) Cu (d) Zn
34. A biological enzyme has Zn(II), it will show_____ESR or EPR peaks.
 (a) 2 (b) 1 (c) 0 (d) 3
35. In rubredoxin, Fe is bonded with four_____amino acid residues
 (a) Arginine (b) Cysteine (c) Proline (d) Tyrosine
36. _____and_____are the heaviest metal and non-metal respectively
 (a) Ln, Cl (b) W, H (c) U, Br (d) Mo, I
37. _____and_____are considered immunity booster for all age group population against COVID-19.
 (a) Zn, Vitamin C (b) V, Vitamin A (c) Mo, Vitamin H (d) Cr, Vitamin B6
38. Goiter occurs due to deficiency of_____
 (a) Chlorine (b) Iodine (c) Bromine (d) Cadmium
39. If the oxidation potentials of enzyme and substrate are 0.48 V and 0.23 V respectively, the overall charge will transfer from_____to_____
 (a) Substrate, Enzyme (b) Substrate, Substrate (c) Enzyme, Enzyme (d) Enzyme, Substrate
40. _____is the arene complex
 (a) $\text{Ni}(\text{CO})_4$ (b) $\text{Cr}(\text{CO})_3(\text{C}_6\text{H}_6)$ (c) $\text{Fe}(\text{CO})_5$ (d) $[\text{PtCl}_3(\text{C}_2\text{H}_4)]-1$
41. Hydroformylation is the process of_____to_____conversion
 (a) Alkene, Aldehyde (b) Alkane, Aldehyde (c) Alkene, Alcohol (d) Alkane, Alcohol
42. $\text{Co}_2(\text{CO})_8$ reagent is used in_____process
 (a) Monsanto acetic acid (b) Haber (c) Hydroformylation (d) Platinum pop
43. $[\text{X}(\text{CO})_2\text{I}_2]^-$ complex is used in the synthesis of acetic acid from methanol, where X=_____
 (a) Re (b) Rh (c) Fe (d) Mo
44. In Wacker process, _____is used as catalytical reagent
 (a) $[\text{PtCl}_4]^{-2}$ (b) $\text{Fe}(\text{CO})_5$ (c) $[\text{PdCl}_4]^{-2}$ (d) $\text{Ni}(\text{CO})_4$
45. _____and_____metals are present in Zeigler-Natta Catalyst
 (a) Ni, Cu (b) Ti, Al (c) Fe, Co (d) Zn, Fe
46. Which of the following statement is false for PuO_5^{-3} ?
 (a) It is green in color (b) The oxidation state of Pu is +7 (c) It is colorless (d) All
47. Which of the following is/are allotropes of Plutonium?
 (a) Epsilon (b) Delta prime (c) Gamma (d) All
48. _____is known as the father of transuranic elements
 (a) McMillan (b) Rutherford (c) G T Seaborg (d) Einstein
49. _____has 2, 8, 18, 32, 31, 8, 2 electronic configuration
 (a) No (b) Lr (c) Md (d) Cf
50. In modern periodic table, Md is located under the Tm. In the upcoming extended periodic table as per the IUPAC system, which of the following expected element will be placed under Md element?
 (a) Upb (b) Upu (c) Upt (d) Upp