Paper code:6005

M.Sc. (Sem. III) Examination(Old Course)

July-sep-2021

CHN-602(I) Inorganic Chemistry

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.

1 Which of the following trans urenic element is named from the planet and it is next to Uranus?

(a) Pu (b) Np (c) U (d) Am

2. Which of the following is most stable isotopes of Plutonium?

(a) ^{238}Pu (b) ^{242}Pu (c) ^{240}Pu (d) ^{244}Pu

3 Which element is produced when ^{238}Pu captures neutron and emits beta particle?

(a) ^{239}Np (b) ^{238}Np (c) ^{239}Pu (d) ^{239}Am

4.What are A and C in the following reaction? $_{94}Pu^{239} + (2n,\gamma) \rightarrow A - \beta^- \rightarrow {}_xAm^y - \beta^- \rightarrow C$

(a) $_{94}Pu^{240}$, $_{96}Cm^{240}$ (b) $_{94}Pu^{241}$, $_{96}Cm^{241}$ (c) $_{95}Am^{241}$, $_{96}Cm^{241}$ (d) $_{95}Am^{241}$, $_{96}Cm^{243}$

5 If $_5B^{11}$ is bombarded with $_{92}U^{235}$, what will be the product?

(a) $_{98}Cf^{246}$ (b) $_{97}Cf^{246}$ (c) $_{97}Bk^{246}$ (d) $_{98}Cf^{240}$

6 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

7 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

8 Which of the following compound of uranium is known as Yellow Cake ?

(a) U_3O_8 (b) $U(NO_3)_2$ (c) UO_2SO_4 (d) UCl_2

9 Which of the following is not considered as organometallic compound?

(a) Ethyl Magnesium Bromide b.Tetra Ethyl Lead c.Sodium Ethoxide d.Tetra Methyl Alluminium

10 Which of the following compound contains Cobalt?

(a) hemoglobin (b) Myoglobin (c) Vitamin B-12 (d) All

11 Hemoglobin consist _____heme groups

(a) 20 b.4 c.2 d.6

12 Molecular weight of hemoglobin _____

(a) 64500 b.14000 c.12000 d.15500

13 The protein in hemoglobin is having _____structure and the protein in myoglobin is having _____structure

(a) Binary and ternary b.Ternary and quaternary c.Quaternary and ternary d.Ternary and ternary

14 A biological enzyme has Zn(II), it will show_____ESR or EPR peaks.

(a) 2 b.1 c.0 d.3

15 In rubredoxin, Fe is bonded with four_____amino acid residues

(a) Arginine b.Cysteine c.Proline d.Tyrosine

16 _____and_____are the heaviest metal and non-metal respectively

(a) Ln, Cl b.W, H c.U, Br d.Mo, I

17 _____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

18 Goiter occurs due to deficiency of_____

(a) Chlorine b.Iodine c.Bromine d.Cadmium

19 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

20 _____is the arene complex

(a) Ni(CO)4 b.Cr(CO)3(C6H6) c.Fe(CO)5 d.[PtCl3(C2H4)]-1

21 The Porphyrins are macro cyclic _____systems.

(a) tetra pyrrole (b) tetra pyridine (c) Tetra furan (d) Tetra thyophin

22 Which of the following sentence is True?

(a) Rubredoxinase is found in anaerobic bacteria b.Iron sulphur proteins have relatively low molecular weight

c. Fe-S distances are observed in Rubredoxin from 2.24 to 2.33A◦ d. All

23 Which of the following does not belong to Fe-S protein?

(a) Hemoglobin (b) Rubredoxin (c) Ferredoxin (d) All

24 Which of the following is reduced form?

(a) NADH (b) NAD^+ (c) Both (d) None

25 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

26 The structure of the various biological proteins can be determined using_____technique.

(a) Raman b.IR c.Microwave d.X-ray

27 Cytochromes are generally useful for _____

(a) Neutron transfer b.Electron transfer c.Proton transfer d.None

28 Haemoglobin and Myoglobin have____and____Fe centers respectively.

(a) 2,3 b.4,1 c.2,2 d.3,3

29 Hemocyanin contains_____metal atoms.

(a) Mo b.Pb c.Cu d.W

30 Chromium metal is found in_____enzyme

(a) Glucose tolerance factor

(b) Cytochrome C b.Haemoglobin c.Cynocobalmin

31 Wilkinson catalyst has_____center metal atom

(a) W b.Fe c.Re d.Rh

32 _____and_____ facilitate oxygen transport and oxygen storage.

(a) Ceruloplasmin, Nitrite reductase b.Superoxide dismatase, Ceruloplasmin

c. Haemoglobin, Myoglobin d.Myoglobin, Haemoglobin

33 Hemerythrin is_____protein

(a) Monomeric b.Oligomeric c.Polymeric d.All

34 _____has not porphyrin ring

(a) Haemoglobin b.Myoglobin c.Hemerythrin d.None

35 Deoxyhemerythrin is_____spin complex

(a) High b.Low c.Both d.None

36 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

37. Carboxylation is_____

(a) Reaction in which CO is reacted with substance in presence of water or alcohol

(b) Reaction in which CO_2 is reacted with substance in presence of water

(c) Reaction in which –CHO is reacted with substance in presence of water (d) None

38. Which element is considered as transuranic elements?

(a) Bk (b) Md (c) Am (d) All

39. 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) Its has three forms of crystal, orthorhombic, tetragonal and cubic (d) It is diamagnetic in nature

40. What is the electronic configuration of Plutonium?

(a) [Rn] $5f^5 7S^2$ (b) [Rn] $5f^6 7S^2$ (c) [Rn] $5f^8 7S^2$ (d) [Xe] $5f^9 7S^2$

41 Hydroformylation is the process of_____to_____conversion

(a) Alkene, Aldehyde b.Alkane, Aldehyde c.Alkene, Alcohol d.Alkane, Alcohol

42 $Co_2(CO)_8$ reagent is used in_____process

(a) Monseanto acetic acid b.Haber c.Hydroformylation d.Platinum pop

43 $[X(CO)_2I_2]^-$ 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) $[PtCl_4]^{-2}$ b.$Fe(CO)_5$ c.$[PdCl_4]^{-2}$ d.$Ni(CO)_4$

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 d.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