

VERSION CODE: A

1. 1.0 g of Mg is burnt with 0.28 g of O₂ in a closed vessel. Which reactant is left in excess and how much?

- A) Mg, 5.8 g B) Mg, 0.58 g C) O₂, 0.24 g D) O₂, 2.4 g

Ans: (B)

2. The orbital nearest to the nucleus is

- A) 4f B) 5d C) 4s D) 7p

Ans: (C)

3. Which of the following is the correct order of radius?

- A) H⁻ > H > H⁺ B) Na⁺ > F⁻ > O²⁻ C) F⁻ > O²⁻ > Na⁺ D) Al³⁺ > Mg²⁺ > N³⁻

Ans: (A)

4. The intramolecular hydrogen bond is present in

- A) Phenol B) o-Nitrophenol C) p-Nitrophenol D) p-Cresol

Ans: (B)

5. The state of hybrid orbitals of carbon in CO₂, CH₄ and CO₃²⁻ respectively is

- A) sp³, sp² and sp B) sp³, sp and sp² C) sp, sp³ and sp² D) sp², sp³ and sp

Ans: (C)

6. For an ideal gas, compressibility factor is

- A) 0 B) 1 C) -1 D) +2

Ans: (B)

7. The relationship between K_p and K_c is K_p = K_c(RT)^{Δn}. What would be the value of Δn for the reaction NH₄Cl(s) ⇌ NH₃(g) + HCl(g)?

- A) 1 B) 0.5 C) 1.5 D) 2

Ans: (D)

8. Acidity of BF₃ can be explained on which of the following concepts?

- A) Arrhenius concept B) Bronsted Lowry concept
C) Lewis concept D) Bronsted Lowry as well as Lewis concept

Ans: (C)

9. For the redox reaction $x \text{MnO}_4^- + y \text{H}_2\text{C}_2\text{O}_4 + z \text{H}^+ \rightarrow m \text{Mn}^{2+} + n \text{CO}_2 + p \text{H}_2\text{O}$. The values of x, y, m and n are

- A) 10, 2, 5, 2 B) 2, 5, 2, 10 C) 6, 4, 2, 4 D) 3, 5, 2, 10

Ans: (B)

10. H₂O₂ is

- A) An oxidising agent B) A reducing agent
C) Both Oxidising and reducing agent D) Neither oxidising nor reducing agent

Ans: (C)

11. Dead burnt plaster is

- A) CaSO_4 B) $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ C) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ D) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

Ans: (A)

12. Identify the following compound which exhibits geometrical isomerism:

- A) But-2-ene B) But-1-ene C) Butane D) Isobutane

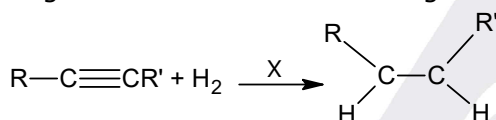
Ans: (A)

13. During the fusion of organic compound with sodium metal, nitrogen present in the organic compound is converted into

- A) NaNO_2 B) NaNH_2 C) NaCN D) NaNC

Ans: (C)

14. The reagent 'X' used for the following reaction is



- A) Ni B) Pd/C C) LiAlH_4 D) Na/Liquid NH_3

Ans: (B)

15. Which of the following ions will cause hardness in water?

- A) Ca^{2+} B) Na^+ C) Cl^- D) K^+

Ans: (A)

16. Which of the following oxides shows electrical properties like metals?

- A) SiO_2 B) MgO C) $\text{SO}_2(\text{s})$ D) CrO_2

Ans: (D)

17. Which of the following aqueous solutions should have the highest boiling point?

- A) 1.0 M NaOH B) 1.0 M Na_2SO_4 C) 1.0 M NH_2NO_3 D) 1.0 M KNO_3

Ans: (B)

18. The charge required for the reduction of 1 mole of MnO_4^- to MnO_2 is

- A) 1F B) 3F C) 5F D) 7F

Ans: (B)

19. For the reaction, $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3$, the rate of disappearance of O_2 is $2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$. The rate of appearance of SO_3 is

- A) $2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$ B) $4 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
C) $1 \times 10^{-1} \text{ mol L}^{-1} \text{ s}^{-1}$ D) $6 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$

Ans: (B)

20. Which of the following electrolytes will have maximum coagulating value for AgI/Ag^+ sol?

- A) Na_2S B) Na_3PO_4 C) Na_2SO_4 D) NaCl

Ans: (D)

21. Electrolytic refining is used to purify which of the following metals?

- (A) Cu and Zn (B) Ge and Si (C) Zr and Ti (D) Zn and Hg

Ans: (A)

22. Dry ice is

- (A) Solid CO (B) Solid SO₂ (C) Solid CO₂ (D) Solid O₂

Ans: (C)

23. Which of the following is an amphoteric oxide?

- (A) V₂O₅, Cr₂O₃ (B) Mn₂O₇, Cr₂O₃ (C) CrO, V₂O₅ (D) V₂O₅, V₂O₄

Ans: (A)

24. The IUPAC name of [Co(NH₃)₄Cl(NO₂)]Cl is

- (A) tetraamminechloridonitrito-N-cobalt(III) chloride
(B) tetraamminechloridonitrocobalt(II) chloride
(C) tetraamminechloridonitrocobalt(I) chloride
(D) tetraamminechloridodinitrocobalt(III) chloride

Ans: (A)

25. Which of the following statements is true in case of alkyl halides?

- (A) They are polar in nature
(B) They can form hydrogen bonds
(C) They are highly soluble in water
(D) They undergo addition reactions

Ans: (A)

26. Phenol can be distinguished from ethanol by the reagent

- (A) Bromine water (B) Sodium metal (C) Iron metal (D) Chlorine water

Ans: (A)

27. Which of the following compounds undergoes haloform reaction?

- (A) CH₃COCH₃ (B) HCHO (C) CH₃CH₂Br (D) CH₃ - O - CH₃

Ans: (A)

28. Which of the following will be the most stable diazonium salt (R N₂⁺ X⁻)?

- (A) CH₃N₂⁺ X⁻ (B) C₆H₅N₂⁺ X⁻ (C) CH₃CH₂N₂⁺ X⁻ (D) C₆H₅CH₂N₂⁺ X⁻

Ans: (B)

29. Which of the following bases is not present in DNA?

- (A) Adenine (B) Guanine (C) Cytosine (D) Uracil

Ans: (D)

30. Which one of the following is a polyamide polymer?

- (A) Terylene (B) Nylon-6,6 (C) Buna-S (D) Bakelite

Ans: (B)

31. In F.C.C. the unit cell is shared equally by how many unit cells?

- A) 10 B) 8 C) 6 D) 2

Ans: (C)

32. At a particular temperature, the ratio of molar conductance to specific conductance of 0.01M NaCl solution is

- A) 10⁵ cm³ mol⁻¹ B) 10³ cm³ mol⁻¹ C) 10 cm³ mol⁻¹ D) 10⁵ cm² mol⁻¹

Ans: (A)

33. Isotonic solutions are solutions having the same

- A) Surface tension B) Vapour pressure C) Osmotic pressure D) Viscosity

Ans: (C)

34. The temperature coefficient of a reaction is 2. When the temperature is increased from 30°C to 90°C, the rate of reaction is increased by

- A) 150 times B) 410 times C) 72 times D) 64 times

Ans: (D)

35. Gold sol is not a
A) Lyophobic sol
B) Negatively charged sol
C) Macromolecular sol
D) Multimolecular colloid

Ans: (C)

36. The common impurity present in bauxite is
A) CuO
B) ZnO
C) Fe₂O₃
D) Cr₂O₃

Ans: (C)

37. Very pure N₂ can be obtained by
A) Thermal decomposition of ammonium dichromate
B) Treating aqueous solution of NH₄Cl and NaNO₂
C) Liquifaction and fractional distillation of liquid air
D) Thermal decomposition of sodium azide

Ans: (D)

38. Which of the following oxidation states is common for all lanthanides?
A) +2
B) +3
C) +4
D) +5

Ans: (B)

39. The electronic configuration of transition element "X", is +3, oxidation state is [Ar]3d⁵. What is its atomic number?
A) 25
B) 26
C) 27
D) 24

Ans: (B)

40. n-Propyl chloride reacts with sodium metal in dry ether to give
A) CH₃-CH₂-CH₂-CH₂-CH₂-CH₃
B) CH₃-CH₂-CH₃
C) CH₃-CH₂-CH₂-CH₃
D) CH₃-CH₂-CH₂-CH₂-CH₂-CH₂-CH₃

Ans: (A)

41. When the vapours of tertiary butyl alcohol are passed through heated copper at 573 K, the product formed is
A) But-2-ene
B) 2-Butanone
C) 2-Methyl propene
D) Butanal

Ans: (C)

42. What is the increasing order of acidic strength among the following?
(i) p-methoxy phenol (ii) p-methyl phenol (iii) p-nitro phenol
A) ii < iii < I
B) iii < ii < I
C) I < ii < iii
D) I < iii < ii

Ans: (C)

43. Which of the following is more basic than aniline?
A) Diphenylamine
B) Triphenylamine
C) p-nitroaniline
D) Benzylamine

Ans: (D)

44. The two forms of D-Glucopyranose are called
A) Diastereomers
B) Anomers
C) Epimers
D) Enantiomers

Ans: (B)

45. Among the following, the branched chain polymer is
A) Polyvinyl chloride
B) Bakelite
C) Low density polythene
D) High density polythene

Ans: (C)

46. Edge length of a cube is 300 pm. Its body diagonal would be
A) 600 pm
B) 423 pm
C) 519.6 pm
D) 450.5 pm

Ans: (C)

47. Which of the following is not a conductor of electricity?
A) Solid NaCl
B) Cu
C) Fused NaCl
D) Brine solution

Ans: (A)

48. For a cell involving two electron changes, $E_{\text{cell}}^0 = 0.3 \text{ V}$ at 25°C . The equilibrium constant of the reaction is

- A) 10^{-10} B) 3×10^{-2} C) 10 D) 10^{10}

Ans: (D)

49. The value of rate constant of a pseudo first order reaction

- A) Depends only on temperature
B) Depends on the concentration of reactants present in small amounts
C) Depends on the concentration of reactants present in excess
D) Is independent of the concentration of reactants

Ans: (A)

50. $(\text{CH}_3)_3\text{SiCl}$ is used during polymerization of organosilicons because

- A) The chain length of organosilicon polymers can be controlled by adding $(\text{CH}_3)_3\text{SiCl}$
B) $(\text{CH}_3)_3\text{SiCl}$ improves the quality and yield of the polymer
C) $(\text{CH}_3)_3\text{SiCl}$ does not block the end terminal of silicone polymer
D) $(\text{CH}_3)_3\text{SiCl}$ acts as a catalyst during polymerization.

Ans: (A)

51. When PbO_2 reacts with concentrated HNO_3 , the gas evolved is

- (A) NO_2 (B) O_2 (C) N_2 (D) N_2O

Ans: (B)

52. KMnO_4 acts as an oxidising agent in alkaline medium. When alkaline KMnO_4 is treated with KI , iodide ion is oxidised to

- (A) I_2 (B) IO^- (C) IO_3^- (D) IO_4^-

Ans: (C)

53. $[\text{Fe}(\text{NO}_2)_3\text{Cl}_3]$ and $[\text{Fe}(\text{O} - \text{NO})_3\text{Cl}_3]$ shows

- (A) Linkage isomerism (B) Geometrical isomerism
(C) Optical isomerism (D) Hydrate isomerism

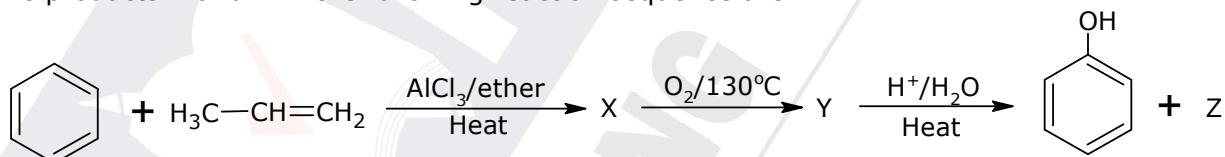
Ans: (A)

54. Tertiary alkyl halide is practically inert to substitution by $\text{S}_{\text{N}}2$ mechanism because of

- (A) Insolubility (B) Instability (C) Inductive effect (D) Steric hindrance

Ans: (D)

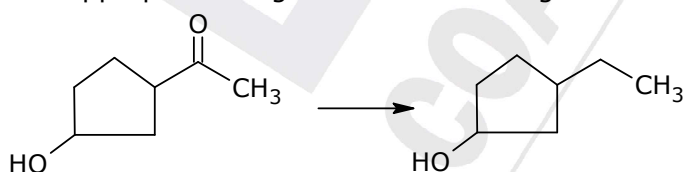
55. The products X and Z in the following reaction sequence are



- (A) Isopropylbenzene and acetone
(B) Cumene peroxide and acetone
(C) Isopropylbenzene and isopropyl alcohol
(D) Phenol and acetone

Ans: (A)

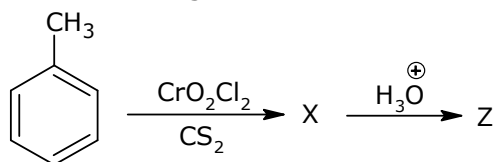
56. The appropriate reagent for the following transformation is



- (A) $\text{Zn} - \text{Hg}/\text{HCl}$ (B) $\text{H}_2\text{N} - \text{NH}_2$, KOH /ethylene glycol
(C) Ni/H_2 (D) NaBH_4

Ans: (B)

57. In the following reaction,



the compound Z is

- (A) Benzoic acid (B) Benzaldehyde (C) Acetophenone (D) Benzene

Ans: (B)

58. The reaction of Benzenediazonium chloride with aniline yields yellow dye. The name of the yellow dye is

- (A) p-Hydroxyazobenzene (B) p-Aminoazobenzene
(C) p-Nitroazobenzene (D) o-Nitroazobenzene

Ans: (B)

59. The glycosidic linkage involved in linking the glucose units in amylose part of starch is

- (A) C₁ - C₄ β-linkage (B) C₁ - C₆ α-linkage
(C) C₁ - C₆ β-linkage (D) C₁ - C₄ α-linkage

Ans: (D)

60. Ziegler-Natta catalyst is used to prepare

- (A) Low-density polythene (B) Teflon
(C) High density polythene (D) Nylon-6

Ans: (C)