

**KCET – 2022 TEST PAPER WITH ANSWER KEY  
(HELD ON FRIDAY 17<sup>TH</sup> JUNE 2022)**

**CHEMISTRY**

1. Which among the following has highest pH?

- (A) 1 M NaOH (B) 1 M H<sub>2</sub>SO<sub>4</sub>  
(C) 0.1M NaOH (D) 1 M HCl

**Ans. A**

2. In which of the following compounds, an element exhibits two different oxidation states ?

- (A) NH<sub>4</sub>NO<sub>3</sub> (B) N<sub>2</sub>H<sub>4</sub>  
(C) N<sub>3</sub>H (D) NH<sub>2</sub>CONH<sub>2</sub>

**Ans. A**

3. Which of the following hydrides is electron deficient ?

- (A) CaH<sub>2</sub> (B) CH<sub>4</sub>  
(C) B<sub>2</sub>H<sub>6</sub> (D) NaH

**Ans. C**

4. Amphoteric oxide among the following:

- (A) CO<sub>2</sub> (B) Ag<sub>2</sub>O  
(C) SnO<sub>2</sub> (D) BeO

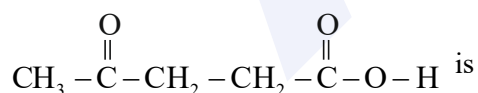
**Ans. D OR C**

5. Which property of CO<sub>2</sub> makes it biologically and geo-chemically important ?

- (A) Its colourless and odourless nature (B) Its low solubility in water  
(C) Its high compressibility (D) Its acidic nature

**Ans. B**

6. The IUPAC name for



- (A) 1,4-dioxopentanol (B) 1-carboxybutan-3-one  
(C) 4-oxopentanoic acid (D) 1-hydroxy pentane-1,4-dione

**Ans. C**

7. 1 mole of HI is heated in a closed container of capacity of 2L. At equilibrium half a mole of HI is dissociated. The equilibrium constant of the reaction is

- (A) 0.5 (B) 0.25  
(C) 0.35 (D) 1

**Ans. B**

8. Vacant space in body centered cubic lattice unit cell is about

- (A) 10% (B) 23%  
(C) 46% (D) 32%

**Ans. D**

9. How many number of atoms are there in a cube based unit cell, having one atom on each corner and 2 atom on each body diagonal of cube ?

- (A) 6 (B) 4  
(C) 9 (D) 8

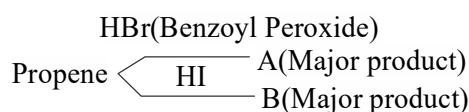
Ans. C

10. Which of the following is **NOT** true about the amorphous solids ?

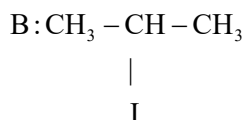
- (A) They may become crystalline on keeping for long time  
(B) Amorphous solids can be moulded by heating  
(C) They are anisotropic in nature  
(D) On heating they may become crystalline at certain temperature.

Ans. C

11. Identify A and B in the reaction



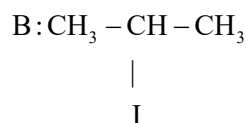
(A) A:  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{Br}$ ,



(B) A:  $\text{CH}_3 - \text{CH} - \text{CH}_3$ , B:  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{I}$



(C) A:  $\text{CH}_3 - \text{CH} - \text{CH}_3$



(D) A:  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{Br}$ , B:  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{I}$

Ans. A

12. Solubility of a gas in a liquid increases with

- (A) decrease of P and increase of T (B) increase of P and decrease of T  
(C) decrease of P and decrease of T (D) increase of P and increase of T

Ans. B

13. The rise in boiling point of a solution containing 1.8g of glucose in 100g of solvent is  $0.1^\circ\text{C}$ . The molal elevation constant of the liquid is

- (A) 1K kg/mol (B) 2K kg/mol  
(C) 10K kg/mol (D) 0.1K kg/mol

Ans. A

14. If 3g of glucose (molar mass=180g) is dissolved in 60g of water at 15°C, the osmotic pressure of the solution will be

- (A) 0.65 atm (B) 6.57 atm  
(C) 5.57 atm (D) 0.34atm

Ans. B

15. Which of the following colligative properties can provide molar mass of proteins, polymers, and colloids with greater precision?

- (A) Elevation in boiling point (B) Depression in freezing point  
(C) Osmotic pressure (D) Relative lowering of vapour pressure

Ans. C

16. In Fuel cells \_\_\_ are used as catalysts

- (A) Nickel–Cadmium (B) Zinc–Mercury  
(C) Lead–Manganese (D) Platinum–Palladium

Ans. D

17. The molar conductivity is maximum for the solution of concentration

- (A) 0.002 M (B) 0.005 M  
(C) 0.001 M (D) 0.004 M

Ans. C

18. Alkali halides do not show dislocation defect because

- (A) Anions cannot be accommodated in vacant spaces  
(B) Cations and anions have almost equal size.  
(C) There is large difference in size of cations and anions  
(D) Cations and anions have low co-ordination number

Ans. B

19. For spontaneity of a cell, which is correct?

- (A)  $\Delta G = -ve, \Delta E = 0$  (B)  $\Delta G = +ve, \Delta E = +ve$   
(C)  $\Delta G = -ve$  (D)  $\Delta G = 0, \Delta E = 0$

Ans. C

20. For  $n^{\text{th}}$  order of reaction, Half-life period is directly proportional to

- (A)  $a^{\frac{1}{1-n}}$  (B)  $a^{n-1}$   
(C)  $a^{1-n}$  (D)  $\frac{1}{a^{n-1}}$

Ans. C

21. Half-life of a reaction is found to be inversely proportional to the fifth power of its initial concentration, the order of reaction is

- (A) 4 (B) 5  
(C) 6 (D) 3

Ans. C

22. A first order reaction is half completed in 45 min. How long does it need 99.9% of the reaction to be completed ?

- (A) 7.5 Hours (B) 10 Hours  
(C) 20 Hours (D) 5 Hours

Ans. A

23. The rate of the reaction  $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$  is given by the equation,

Rate =  $K[\text{CH}_3\text{COOC}_2\text{H}_5][\text{NaOH}]$ . If concentration is expressed in  $\text{mol L}^{-1}$ , the unit of K is

- (A)  $\text{mol L}^{-1}\text{s}^{-1}$  (B)  $\text{L mol}^{-1}\text{s}^{-1}$   
 (C)  $\text{s}^{-1}$  (D)  $\text{mol}^{-2}\text{L}^2\text{s}^{-1}$

Ans. B

24. Colloidal solution commonly used in the treatment of skin disease is

- (A) Colloidal Silver (B) Colloidal Gold  
 (C) Colloidal Antimony (D) Colloidal Sulphur

Ans. D

25. Specific conductance of 0.1 M  $\text{HNO}_3$  is  $6.3 \times 10^{-2} \text{ohm}^{-1}\text{cm}^{-1}$ . The molar conductance of the solution is

- (A)  $315 \text{ohm}^{-1}\text{cm}^2\text{mol}^{-1}$  (B)  $6.300 \text{ohm}^{-1}\text{cm}^2\text{mol}^{-1}$   
 (C)  $63.0 \text{ohm}^{-1}\text{cm}^2\text{mol}^{-1}$  (D)  $630 \text{ohm}^{-1}\text{cm}^2\text{mol}^{-1}$

Ans. D

26. The property of halogens which is not correctly matched is

- (A)  $\text{F} > \text{Cl} > \text{Br} > \text{I}$  (electronegativity) (B)  $\text{I} > \text{Br} > \text{Cl} > \text{F}$  (density)  
 (C)  $\text{F} > \text{Cl} > \text{Br} > \text{I}$  (electron gain enthalpy) (D)  $\text{F} > \text{Cl} > \text{Br} > \text{I}$  (ionization enthalpy)

Ans. C

27. Which noble gas has least tendency to form compounds ?

- (A) Ne (B) Ar  
 (C) Kr (D) He

Ans. D

28.  $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$  on heating liberates a gas. The same gas will be obtained by

- (A) heating  $\text{NH}_4\text{NO}_2$  (B) treating  $\text{H}_2\text{O}_2$  with  $\text{NaNO}_2$   
 (C) treating  $\text{Mg}_3\text{N}_2$  with  $\text{H}_2\text{O}$  (D) heating  $\text{NH}_4\text{NO}_3$

Ans. A

29. The strong reducing property of hypophosphorous acid is due to

- (A) The positive valency of phosphorus  
 (B) Two P - H bonds  
 (C) Resence of phosphorus in its highest oxidation state  
 (D) Its concentration

Ans. B

30. A transition metal exists in its highest oxidation state. It is expected to behave as

- (A) A Central metal in a co-ordination compound (B) An oxidizing agent  
 (C) A reducing agent (D) A chelating agent

Ans. B

31. What will be the value of x in  $\text{Fe}^{x+}$ , if the magnetic moment  $\mu = \sqrt{24} \text{BM}$  ?

- (A) +3 (B) 0  
 (C) +1 (D) +2

**Ans. D**

32. Which can adsorb larger volume of hydrogen gas ?

- (A) Colloidal solution of palladium (B) Finely divided platinum  
(C) Colloidal  $\text{Fe}(\text{OH})_3$  (D) Finely divided nickel

**Ans. A**

33. All  $\text{Cu}(\text{II})$  halides are known, except the iodide, the reason for it is that

- (A)  $\text{Cu}^{+2}$  oxidises iodide to iodine (B)  $\text{Cu}^{+2}$  has much more negative hydration enthalpy.  
(C)  $\text{Cu}^{+2}$  ion has smaller size. (D) Iodide is bulky ion.

**Ans. A**

34. The correct IUPAC name of cis-platin is

- (A) Dimmine dichlorido platinum (IV) (B) Diammine dichlorido platinum (O)  
(C) Dichlorido diammine platinum (IV) (D) Diammine dichlorido platinum (II)

**Ans. D**

35. Crystal Field Splitting Energy (CFSE) for  $[\text{CoCl}_6]^{4-}$  is  $18000 \text{ cm}^{-1}$ . The Crystal Field Splitting Energy (CFSE) for  $[\text{CoCl}_4]^{2-}$  will be

- (A)  $16000 \text{ cm}^{-1}$  (B)  $8000 \text{ cm}^{-1}$   
(C)  $10,000 \text{ cm}^{-1}$  (D)  $18000 \text{ cm}^{-1}$

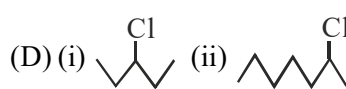
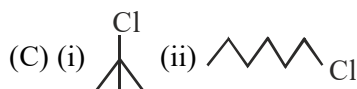
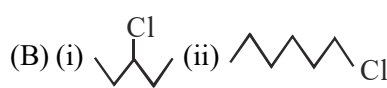
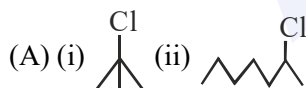
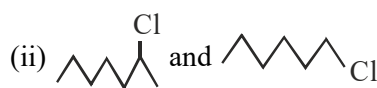
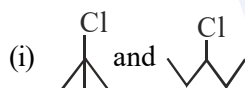
**Ans. B**

36. The complex hexamine platinum (IV) chloride will give \_\_\_\_ number of ions on ionization.

- (A) 4 (B) 3  
(C) 2 (D) 5

**Ans. D**

37. In the following pairs of halogen compounds, which compound undergoes faster  $\text{SN}^1$  reaction ?



**Ans. A**

38. The only Lanthanoid which is radioactive

- (A) Cerium (B) Promethium  
(C) Praseodymium (D) Lanthanum

**Ans. B**

39. Identify the products A and B in the reactions :



- (A)  $\text{A} = \text{RCN}$  ;  $\text{B} = \text{RNC}$  (B)  $\text{A} = \text{RNC}$  ;  $\text{B} = \text{RCN}$   
(C)  $\text{A} = \text{RNC}$  ;  $\text{B} = \text{RNC}$  (D)  $\text{A} = \text{R} - \text{CN}$  ;  $\text{B} = \text{RCN}$

**Ans. B**

40. An organic compound with molecular formula  $C_7H_8O$  dissolves in NaOH and gives a characteristic colour with  $FeCl_3$ . On treatment with bromine, it gives a tribromo derivative  $C_7H_5OBr_3$ . The compound is
- (A) o - Cresol (B) m - Cresol  
(C) p - Cresol (D) Benzyl alcohol

Ans. B

41. In Kolbes reaction the reacting substances are

- (A) Phenol and  $CCl_4$  (B) Sodium phenate and  $CCl_4$   
(C) Phenol and  $CHCl_3$  (D) Sodium phenate and  $CO_2$

Ans D

42. The major product obtained when ethanol is heated with excess of conc.  $H_2SO_4$  at 443 K is

- (A) Ethyne (B) Ethane  
(C) Methane (D) Ethene

Ans D

43. Among the following, the products formed by the reaction of anisole with HI are:

- (A) Sodium phenate + Methanol (B) Benzene + Methanol  
(C) Phenol + Methane (D) Phenol + Iodomethane

Ans D

44. Which one of the following Chlorohydrocarbon readily undergoes solvolysis?

- (A)  (B)   
(C)  (D)  $CH_2 = CHCl$

Ans B

45. The general name of the compound formed by the reaction between aldehyde and alcohol is

- (A) Acetal (B) Glycol  
(C) Acetate (D) Ester

Ans D

46. Reaction by which benzaldehyde can not be prepared is:

- (A) Benzoic acid  $\xrightarrow{Zn-Hg \text{ and } \text{con. } HCl}$   
(B) Toluene  $\xrightarrow[\text{(ii) } H_3O^+]{\text{(i) } CrO_2Cl_2 \text{ in } CS_2}$   
(C) Benzoyl chloride +  $H_2 \xrightarrow[\Delta]{Pd-BaSO_4}$   
(D) Benzene +  $CO + HCl \xrightarrow{\text{anhydrous } AlCl_3}$

Ans A

47. The test to differentiate between pentan-2-one and pentan-3-one is

- (A) Benedict's test (B) Fehling's test  
(C) Iodoform test (D) Baeyer's test

Ans C

48. In Carbylamine test for primary amines the resulting foul smelling product is

- (A)  $CH_3CN$  (B)  $CH_3NC$   
(C)  $COCl_2$  (D)  $CH_3NCl_2$

Ans B

49. Ethanoic acid undergoes Hell-Volhard Zelinsky reaction but Methanoic acid does not, because of
- Presence of  $\alpha$  – H atom in ethanoic acid
  - Absence of  $\alpha$  – H atom in ethanoic acid
  - Higher acidic strength of ethanoic acid than methanoic acid
  - Presence of  $\alpha$  – H atom in methanoic acid

**Ans. A**

50. Which of the following is correctly matched ?
- Teflon – Copralactum
  - Bakelite – Novolac
  - Polyster – Tetrafluoroethene
  - Nylon – Acrylonitrile

**Ans. B**

51. Which institute has approved the emergency use of 2-deoxy-D-Glucose as additive therapy for COVID-19 patients?
- World Health Organisation
  - Ministry of Health and Family Welfare
  - Drug Controller General of India
  - India Council of Medical Research

**Ans. C**

52. A Nucleic acid, whether DNA or RNA gives on complete hydrolysis, two purine bases, two pyrimidine bases, a pentose sugar and phosphoric acid. Nucleotides which are intermediate products in the hydrolysis contain
- A purine base, pentose sugar and ortho-phosphoric acid
  - Purine or pyrimidine base and ortho-phosphoric acid
  - Purine or pyrimidine base, a pentose sugar and ortho-phosphoric acid
  - purine or pyrimidine base and pentose sugar

**Ans. C**

53. A secondary amine is
- A compound with two carbon atom and an  $\text{NH}_2$  group
  - A compound with an  $\text{NH}_2$  group on the carbon atom in number 2 position
  - A compound in which 2 of the hydrogen of  $\text{NH}_3$  have been replaced by organic group
  - An organic compound with two  $\text{NH}_2$  group

**Ans. C**

54. If wavelength of photon is  $2.2 \times 10^{-11}$  m and  $h = 6.6 \times 10^{-34}$  J s, then momentum of photon
- $3.33 \times 10^{-22}$  kg  $\text{ms}^{-1}$
  - $1.452 \times 10^{-44}$  kg  $\text{ms}^{-1}$
  - $6.89 \times 10^{+43}$  kg  $\text{ms}^{-1}$
  - $3 \times 10^{-23}$  kg  $\text{ms}^{-1}$

**Ans. D**

55. Element X, Y and Z have atomic numbers 19, 37 and 55 respectively. Which of the following statements is true about them ?
- Y would have an ionization potential between those of X and Z.
  - Z would have the highest ionization potential.
  - Y would have the highest ionization potential.
  - Their ionization potential would increase with increasing atomic number.

**Ans. A**

56. In oxygen and carbon molecule the bonding is

- (A)  $O_2 : 2\sigma, 0\pi ; C_2 : 0\sigma, 2\pi$  (B)  $O_2 : 1\sigma, 1\pi ; C_2 : 0\sigma, 2\pi$   
(C)  $O_2 : 0\sigma, 2\pi ; C_2 : 2\sigma, 0\pi$  (D)  $O_2 : 1\sigma, 1\pi ; C_2 : 1\sigma, 1\pi$

Ans. B

57. Which is most VISCOUS?

- (A) Ethanol (B) Ethylene glycol  
(C) Glycerol (D) Methanol

Ans. C

58. The volume of 2.8 g of CO at  $27^\circ\text{C}$  and 0.821 atm. pressure is ( $R = 0.08210 \text{ lit. atm. K}^{-1} \text{ mol}^{-1}$ )

- (A) 1.5 litres (B) 3 litres  
(C) 30 litres (D) 0.3 litres

Ans. B

59. The work done when 2 moles of an ideal gas expands reversibly and isothermally from a volume of 1 L to 10 L at 300 K is ( $R = 0.0083 \text{ kJ K mol}^{-1}$ )

- (A) 5.8 kJ (B) 0.115 kJ  
(C) 58.5 kJ (D) 11.5 kJ

Ans. D

60. An aqueous solution of alcohol contains 18 g of water and 414 g of ethyl alcohol. The mole fraction of water is

- (A) 0.4 (B) 0.7  
(C) 0.9 (D) 0.1

Ans. D