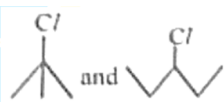
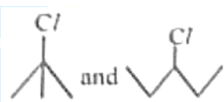
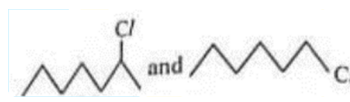
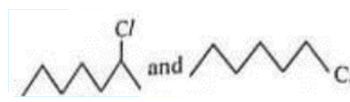


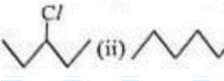
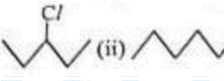
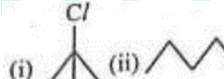
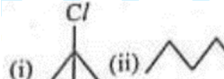
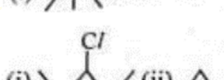
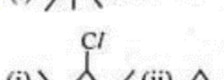
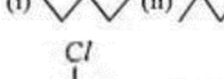
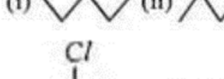
**KCET EXAMINATION – 2022**  
**SUBJECT : CHEMISTRY (VERSION – B3)**

**DATE :- 17-06-2022**

**TIME : 02.30 PM TO 03.50 PM**

- |  |   |
|--|---|
| <p>1. A first order reaction is half completed in 45 min. How long does it need 99.9% of the reaction to be completed?<br/>1) 10 Hours                      2) 20 Hours<br/>3) 5 Hours                        4) 7.5 Hours</p> <p>2. The rate of the reaction<br/><math>\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}</math><br/>is given by the equation , Rate = <math>K[\text{CH}_3\text{COOC}_2\text{H}_5][\text{NaOH}]</math>. If concentration is expressed in <math>\text{mol L}^{-1}</math>, the unit of K is<br/>1) <math>\text{L mol}^{-1}\text{s}^{-1}</math>                      2) <math>\text{s}^{-1}</math><br/>3) <math>\text{mol}^{-2}\text{L}^2\text{s}^{-1}</math>                    4) <math>\text{molL}^{-1}\text{s}^{-1}</math></p> <p>3. Colloidal solution commonly used in the treatment of skin disease is<br/>1) Colloidal Gold<br/>2) Colloidal Antimony<br/>3) Colloidal Sulphur<br/>4) Colloidal Silver</p> | <p>4. Specific conductance of 0.1 M <math>\text{HNO}_3</math> is <math>6.3 \times 10^{-2} \text{ ohm}^{-1} \text{ cm}^{-1}</math>. The molar conductance of the solution is<br/>1) <math>6.300 \text{ ohm}^{-1}\text{cm}^2\text{mol}^{-1}</math><br/>2) <math>63.0 \text{ ohm}^{-1}\text{cm}^2\text{mol}^{-1}</math><br/>3) <math>630 \text{ ohm}^{-1}\text{cm}^2\text{mol}^{-1}</math><br/>4) <math>315 \text{ ohm}^{-1}\text{cm}^2\text{mol}^{-1}</math></p> <p>5. For spontaneity of a cell, which is correct?<br/>1) <math>\Delta G = +ve, \Delta E = +ve</math>    2) <math>\Delta G = -ve</math><br/>3) <math>\Delta G = 0, \Delta E = 0</math>        4) <math>\Delta G = -ve, \Delta E = 0</math></p> <p>6. For <math>n^{\text{th}}</math> of reaction, Half-life period is directly proportional to<br/>1) <math>a^{n-1}</math>        2) <math>a^{1-n}</math>        3) <math>\frac{1}{a^{n-1}}</math>        4) <math>\frac{1}{a^{1-n}}</math></p> |
|--|---|

7. Half-life of a reaction is found to be inversely proportional to the fifth power of initial concentration, the order of reaction is  
1) 5      2) 6      3) 3      4) 4
8. The strong reducing property of hypophosphorous acid is due to  
1) Two P-H bonds  
2) Presence of phosphorus in its highest oxidation state  
3) Its concentration  
4) The positive valency of phosphorus
9. A transition metal exists in its highest oxidation state. It is expected to behave as  
1) An oxidizing agent  
2) A reducing agent  
3) A chelating agent  
4) A central metal in a co-ordination compound
10. What will be the value of  $x$  in  $\text{Fe}^{x+}$ , if the magnetic moment  $\mu = \sqrt{24}\text{BM}$ ?  
1) 0      2) +1      3) +2      4) +3
11. Which can adsorb larger of hydrogen gas?  
1) Finely divided platinum  
2) Colloidal  $\text{Fe}(\text{OH})_3$   
3) Finely divided nickel  
4) Colloidal solution of palladium
12. The property of halogens which is not correctly matched is  
1)  $\text{I} > \text{Br} > \text{Cl} > \text{F}$  (density)  
2)  $\text{F} > \text{Cl} > \text{Br} > \text{I}$  (electron gain enthalpy)  
3)  $\text{F} > \text{Cl} > \text{Br} > \text{I}$  (ionization enthalpy)  
4)  $\text{F} > \text{Cl} > \text{Br} > \text{I}$  (electronegativity)
13. Which noble gas has least tendency to form compounds?  
1) Ar      2) Kr      3) He      4) Ne
14.  $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$  on heating liberates a gas. The same gas will be obtained by  
1) Treating  $\text{H}_2\text{O}_2$  with  $\text{NaNO}_2$   
2) Treating  $\text{Mg}_3\text{N}_2$  with  $\text{H}_2\text{O}$   
3) Heating  $\text{NH}_4\text{NO}_3$   
4) Heating  $\text{NH}_4\text{NO}_2$
15. The complex hexamine platinum (IV) chloride will give \_\_\_\_\_ number of ions on ionization.  
1) 3      2) 2      3) 5      4) 4
16. In the following pairs of halogen compounds, which compound undergoes faster  $\text{SN}^1$  reaction?
- (i)  and 
- (ii)  and 
- 1) 

$\uparrow\downarrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$
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- (i)  (ii) 
- 2) (i)  (ii) 
- 3) (i)  (ii) 
- 4) (i)  (ii) 

17. The only Lanthanoid which is radioactive

- 1) Promethium                      2) Praseodymium
- 3) Lanthanum                      4) Cerium

18. All Cu(II) halides are known, except the iodide, the reaction for it is that

- 1)  $\text{Cu}^{+2}$  has much more negative hydration enthalpy
- 2)  $\text{Cu}^{+2}$  ion has smaller size
- 3) Iodide is bulky ion
- 4)  $\text{Cu}^{+2}$  oxidises iodide to iodine

19. The correct IUPAC name of cis-platin is

- 1) Diammine dichloride platinum (O)
- 2) Dichlorido diammine platinum (IV)
- 3) Diammine dichlorido platinum (II)
- 4) Diammine dichloride platinum (IV)

20. 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

- 1)  $8000\text{ cm}^{-1}$                       2)  $10,000\text{ cm}^{-1}$
- 3)  $18,000\text{ cm}^{-1}$                       4)  $16,000\text{ cm}^{-1}$

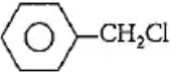
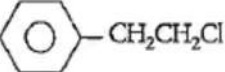
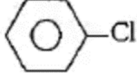
21. The major product obtained when ethanol is heated with excess of conc.  $\text{H}_2\text{SO}_4$  at  $443\text{ K}$  is

- 1) ethane                              2) methane
- 3) ethene                              4) ethyne

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

- 1) Benzene + Methanol
- 2) Phenol + Methane
- 3) Phenol + Iodomethane
- 4) Sodium phenate + Methanol

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

- 1)                       2) 
- 3)  $\text{CH}_2 = \text{CHCl}$                       4) 

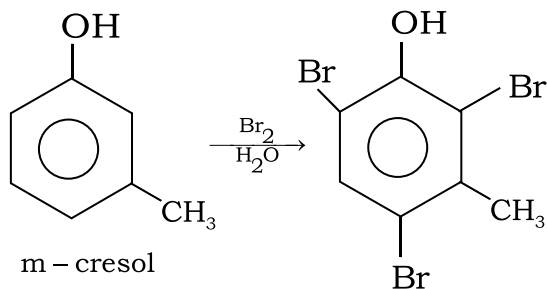
24. Identify the products A and B in the reactions:



- 1)  $\text{A} = \text{RNC}$ ;  $\text{B} = \text{RCN}$
- 2)  $\text{A} = \text{RNC}$ ;  $\text{B} = \text{RNC}$
- 3)  $\text{A} = \text{R} - \text{CN}$ ;  $\text{B} = \text{RCN}$
- 4)  $\text{A} = \text{RCN}$ ;  $\text{B} = \text{RNC}$

25. An organic compound with molecular formula  $\text{C}_7\text{H}_8\text{O}$  dissolves in NaOH and gives a characteristic colour with  $\text{FeCl}_3$ . On treatment with bromine, it gives a tribromo derivative  $\text{C}_7\text{H}_5\text{OBr}_3$ . The compound is

- 1) m-Cresol                              2) p-Cresol
- 3) Benzyl alcohol                      4) o-Cresol



Meta-derivative of phenol only gives tribromo derivative

26. In Kolbes reaction the reacting substances are

- 1) Sodium phenate and  $\text{CCl}_4$
- 2) Phenol and  $\text{CHCl}_3$
- 3) Sodium phenate and  $\text{CO}_2$
- 4) Phenol and  $\text{CCl}_4$

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

- 1)  $\text{CH}_3\text{NC}$
- 2)  $\text{COCl}_2$
- 3)  $\text{CH}_3\text{NCl}_2$
- 4)  $\text{CH}_3\text{CN}$

28. Ethanoic acid undergoes Hell-Volhard Zelinsky reaction but Methanoic acid does not, because of

- 1) absence of  $\alpha$ -H atom in ethanoic acid
- 2) higher acidic strength of ethanoic acid than methanoic acid
- 3) presence of  $\alpha$ -H atom in methanoic acid
- 4) presence of  $\alpha$ -H atom in ethanoic acid

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

- 1) Glycol
- 2) Acetate
- 3) Ester
- 4) Acetal

30. Reaction by which benzaldehyde can not be prepared is

- 1) Toluene  $\xrightarrow[\text{(ii) } \text{H}_3\text{O}^+]{\text{(i) } \text{CrO}_2\text{Cl}_2 \text{ in } \text{CS}_2}$
- 2) Benzoyl chloride  $+\text{H}_2 \xrightarrow[\Delta]{\text{Pd-BaSO}_4}$
- 3) Benzene  $+\text{CO} + \text{HCl} \xrightarrow{\text{anhydrous AlCl}_3}$
- 4) Benzoic acid  $\xrightarrow{\text{Zn-Hg and con. HCl}}$

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

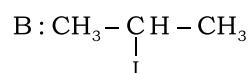
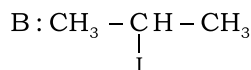
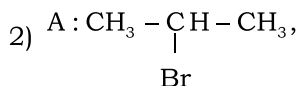
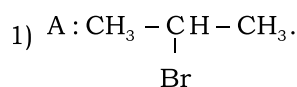
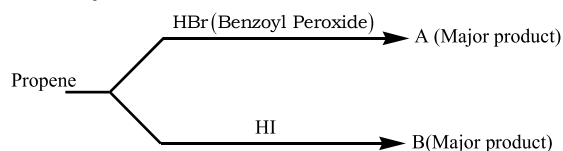
- 1) Fehling's test
- 2) Iodoform test
- 3) Baeyer's test
- 4) Benedict's test



32. A secondary amine is
- 1) a compound with an  $\text{NH}_2$  group on the carbon atom in number 2 position
  - 2) a compound in which 2 of the hydrogen of  $\text{NH}_3$  have been replaced by organic groups
  - 3) an organic compound with two  $\text{NH}_2$  group
  - 4) a compound with two carbon atom and an  $\text{NH}_2$  group
33. Which of the following is correctly matched?
- 1) Bakelite - Novolac
  - 2) Polyester - tetrafluoroethene
  - 3) Nylon - acrylonitrile
  - 4) Teflon - copralactum
34. Which institute has approved the emergency use of 2-deoxy-D-Glucose as additive therapy for COVID-19 patients?
- 1) Ministry of Health and Family Welfare
  - 2) Drug Controlled General of India
  - 3) Indian Council of Medical Research
  - 4) World Health Organisation
35. A Nucleic acid, whether DNA or RNA gives on complete hydrolysis, two purines bases, two pyrimidine bases, a pentose sugar and phosphoric acid. Nucleotides which are intermediate products in the hydrolysis contain
- 1) purine or pyrimidine base and ortho-phosphoric acid
  - 2) purine or pyrimidine base, a pentose sugar and ortho-phosphoric acid
  - 3) purine or pyrimidine base and pentose sugar
  - 4) a purine base, pentose sugar and ortho-phosphoric acid
36. Which is most VISCOUS?
- 1) Ethylene glycol
  - 2) Glycerol
  - 3) Methanol
  - 4) Ethanol
37. The volume of 2.8g of CO at  $27^\circ\text{C}$  and 0.821 atm, pressure is ( $R = 0.08210 \text{ lit.atm.K}^{-1}\text{mol}^{-1}$ )
- 1) 3 litres
  - 2) 30 litres
  - 3) 0.3 litres
  - 4) 1.5 litres
38. The work done when 2 moles of an ideal gas expands reversibly and isothermally from a volume of 1L to 10L at 300K is ( $R = 0.0083 \text{ kJ K mol}^{-1}$ )
- 1) 0.115 kJ
  - 2) 58.5 kJ
  - 3) 11.5 kJ
  - 4) 5.8 kJ
39. An aqueous solution of alcohol contains 18g of water and 414g of ethyl alcohol. The mole fraction of water is
- 1) 0.7
  - 2) 0.9
  - 3) 0.1
  - 4) 0.4
40. If wavelength of photon is  $2.2 \times 10^{-11} \text{ m}$  and  $h = 6.6 \times 10^{-34} \text{ J s}$ , then momentum of photon
- 1)  $1.452 \times 10^{-44} \text{ kg m s}^{-1}$
  - 2)  $6.89 \times 10^{43} \text{ kg m s}^{-1}$
  - 3)  $3 \times 10^{-23} \text{ kg m s}^{-1}$
  - 4)  $3.33 \times 10^{-22} \text{ kg m s}^{-1}$

41. Elements X, Y and Z have atomic number 19, 37 and 55 respectively. Which of the following statements is true about them?
- Z would have the highest ionization potential
  - Y would have the highest ionization potential
  - Their ionization potential would increase with increasing atomic number
  - Y would have an ionization potential between those of X and Z
42. In oxygen and carbon molecule the bonding is
- $O_2 : 1\sigma, 1\pi; C_2 : 0\sigma, 2\pi$
  - $O_2 : 0\sigma, 2\pi; C_2 : 2\sigma, 0\pi$
  - $O_2 : 1\sigma, 1\pi; C_2 : 1\sigma, 1\pi$
  - $O_2 : 2\sigma, 0\pi; C_2 : 0\sigma, 2\pi$
43. Amphoteric oxide among the following:
- $Ag_2O$
  - $SnO_2$
  - $BeO$
  - $CO_2$
44. Which property of  $CO_2$  makes it biologically and geo-chemically important?
- Its low solubility in water
  - Its high compressibility
  - Its acidic nature
  - Its colourless and odourless nature
45. The IUPAC name for
- $$CH_3 - \overset{\overset{O}{\parallel}}{C} - CH_2 - CH_2 - \overset{\overset{O}{\parallel}}{C} - O - H$$
- 1-carboxybutan-3-one
  - 4-oxopentanoic acid
  - 1-hydroxy pentane-1, 4-dione
  - 1,4-dioxopentanol
46. 1 mole of HI is heated in a closed container of capacity of 2 L. At equilibrium half a mole of HI is dissociated. The equilibrium constant of the reaction is
- 0.25
  - 0.35
  - 1
  - 0.5
47. Which among the following has highest pH?
- $1M H_2SO_4$
  - $0.1M NaOH$
  - $1M HCl$
  - $1M NaOH$
48. In which of the following compounds, an element exhibits two different oxidation states?
- $N_2H_4$
  - $N_3H$
  - $NH_2CONH_2$
  - $NH_4NO_3$
49. Which of the following hydrides is electron deficient?
- $CH_4$
  - $B_2H_6$
  - $NaH$
  - $CaH_2$

50. Identify A and B in the reaction



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

- 1) 23%      2) 46%      3) 32%      4) 10%

52. 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?

- 1) 4      2) 9      3) 8      4) 6

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

- 1) Amorphous solids can be moulded by heating
- 2) They are anisotropic in nature
- 3) On heating they may become crystalline at certain temperature
- 4) They may become crystalline on keeping for long time.

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

- 1) Depression in freezing point
- 2) Osmotic pressure
- 3) Relative lowering of vapour pressure
- 4) Elevation in boiling point

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

- 1) Zinc - Mercury
- 2) Lead - Manganese
- 3) Platinum - Palladium
- 4) Nickel - Cadmium

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

- |            |            |
|------------|------------|
| 1) 0.005 M | 2) 0.001 M |
| 3) 0.004 M | 4) 0.002 M |

57. Alkali halides do not show dislocation defect because

- 1) Cations and anions have almost equal size
- 2) There is large difference in size of cations and anions
- 3) Cations and anions have low co-ordination number.
- 4) Anions cannot be accommodated in vacant spaces.

58. Solubility of a gas in a liquid increases with

- 1) increase of P and decrease of T
- 2) decrease of P and decrease of T
- 3) increase of P and increase of T
- 4) decrease of P and increase of T

59. The rise in boiling point of a solution containing 1.8 g of glucose in 100g of solvent is  $0.1^{\circ}\text{C}$ . The molal elevation constant of the liquid is
- 1)  $2\text{K kg / mol}$                       2)  $10\text{K kg / mol}$   
3)  $0.1\text{K kg / mol}$                       4)  $1\text{K kg / mol}$

60. If 3 g of glucose (molar mass = 180g) is dissolved in 60 g of water at  $15^{\circ}\text{C}$ , the osmotic pressure of the solution will be
- 1) 6.57 atm                      2) 5.57 atm  
3) 0.34 atm                      4) 0.65 atm