

### KCET 2018 CHEMISTRY QUESTION PAPER

1. 1.0 g of Mg is burnt with 0.28 g of O<sub>2</sub> in a closed vessel. Which reactant is left in excess and how much?
  - a) Mg, 5.8 g
  - b) Mg, 0.58 g
  - c) O<sub>2</sub>, 0.24 g
  - d) O<sub>2</sub>, 2.4 g
2. The orbital nearest to the nucleus is
  - a) 4f
  - b) 5d
  - c) 4s
  - d) 7p
3. Which of the following is the correct order of radius?
  - a) H<sup>-</sup> > H > H<sup>+</sup>
  - b) Na<sup>+</sup> > F > O<sup>2-</sup>
  - c) F > O<sup>2-</sup> > Na<sup>+</sup>
  - d) Al<sup>3+</sup> > Mg<sup>2+</sup> > N<sup>3-</sup>
4. The intramolecular hydrogen bond is present in
  - a) Phenol
  - b) α-Nitrophenol
  - c) p-Nitrophenol
  - d) p-Cresol
5. The state of hybrid orbitals of carbon in CO<sub>2</sub>, CH<sub>4</sub> and CO<sub>3</sub><sup>2-</sup> respectively is
  - a) sp<sup>3</sup>, sp<sup>2</sup> and sp
  - b) sp<sup>3</sup>, sp and sp<sup>2</sup>
  - c) sp, sp<sup>3</sup> and sp<sup>2</sup>
  - d) sp<sup>2</sup>, sp<sup>3</sup> and sp
6. For an ideal gas, compressibility factor is
  - a) 0
  - b) 1
  - c) -1
  - d) +2
7. The relationship between K<sub>p</sub> and K<sub>c</sub> is K<sub>p</sub> = K<sub>c</sub> (RT)<sup>Δn</sup>. What would be the value of Δn for the reaction NH<sub>4</sub>Cl<sub>(s)</sub> ⇌ NH<sub>3(g)</sub> + HCl<sub>(g)</sub>?
  - a) 1
  - b) 0.5
  - c) 1.5
  - d) 2
8. Acidity of BF<sub>3</sub> 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
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, 5
  - d) 3, 5, 2, 10
10. H<sub>2</sub>O<sub>2</sub> is
  - a) An oxidizing agent
  - b) A reducing agent
  - c) Both oxidising and reducing agent
  - d) Neither oxidizing nor reducing agent
11. Dead burnt plaster is
  - a) CaSO<sub>4</sub>
  - b) CaSO<sub>4</sub> ·  $\frac{1}{2}$  H<sub>2</sub>O
  - c) CaSO<sub>4</sub> · H<sub>2</sub>O
  - d) CaSO<sub>4</sub> · 2H<sub>2</sub>O
12. Identify the following compound which exhibits geometrical isomerism:
  - a) But - 2 - ene
  - b) But - 1 - ene
  - c) Butane
  - d) Isobutane
13. During the fusion of organic compound with sodium metal, nitrogen present in the organic compound is converted into
  - a) NaNO<sub>2</sub>
  - b) NaNH<sub>2</sub>
  - c) NaCN
  - d) NaNC
14. The reagent 'X' used for the following reaction is
 

$$\text{R}-\text{C}\equiv\text{CR}' + \text{H}_2 \xrightarrow{\text{X}} \begin{array}{c} \text{R} \quad \quad \text{R}' \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{H} \quad \quad \text{H} \end{array}$$

  - a) Ni
  - b) Pd/C
  - c) LiAlH<sub>4</sub>
  - d) Na/Liquid NH<sub>3</sub>
15. Which of the following ions will cause hardness in water?
  - a) Ca<sup>2+</sup>
  - b) Na<sup>+</sup>
  - c) Cl<sup>-</sup>
  - d) K<sup>+</sup>
16. Which of the following oxides shows electrical properties like metals?
  - a) SiO<sub>2</sub>
  - b) MgO
  - c) SO<sub>2</sub>(s)
  - d) CrO<sub>2</sub>

17. Which of the following aqueous solution should have the highest boiling point?  
 a) 1.0 M NaOH                      b) 1.0 M  $\text{Na}_2\text{SO}_4$   
 c) 1.0 M  $\text{NH}_4\text{NO}_3$                 d) 1.0 M  $\text{KNO}_3$
18. The charge required for the reduction of 1 mole of  $\text{MnO}_4^-$  to  $\text{MnO}_2$  is  
 a) 1 F                                      b) 3 F  
 c) 5 F                                      d) 7 F
19. For the reaction,  
 $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3$   
 The rate of disappearance of  $\text{O}_2$  is  $2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$ . The rate of appearance of  $\text{SO}_3$  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)  $1 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$         d)  $6 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
20. Which of the following electrolytes will have maximum coagulating value for  $\text{AgI} / \text{Ag}^+ \text{ sol}$ ?  
 a)  $\text{Na}_2\text{S}$                                 b)  $\text{Na}_3\text{PO}_4$   
 c)  $\text{Na}_2\text{SO}_4$                               d)  $\text{NaCl}$
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
22. Dry ice is  
 a) Solid CO                              b) Solid  $\text{SO}_2$   
 c) Solid  $\text{CO}_2$                             d) Solid  $\text{O}_2$
23. Which of the following is an amphoteric oxide?  
 a)  $\text{V}_2\text{O}_5, \text{Cr}_2\text{O}_3$                       b)  $\text{Mn}_2\text{O}_7, \text{Cr}_2\text{O}_3$   
 c)  $\text{CrO}, \text{V}_2\text{O}_5$                          d)  $\text{V}_2\text{O}_5, \text{V}_2\text{O}_4$
24. The IUPAC name of  $[\text{Co}(\text{NH}_3)_4 \text{Cl}(\text{NO}_2)]\text{Cl}$  is  
 a) Tetraamminechloridonitrito – N – cobalt (III) chloride  
 b) Tetraamminechloridonitrocobalt (II) chloride  
 c) Tetraamminechloridonitrocobalt (I) chloride  
 d) Tetraamminechloridodinitrocobalt (III) chloride
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
26. Phenol can be distinguished from ethanol by the reagent  
 a) Bromine water                      b) Sodium metal  
 c) Iron metal                             d) Chlorine water
27. Which of the following compounds undergoes haloform reaction?  
 a)  $\text{CH}_3\text{COCH}_3$                         b)  $\text{HCHO}$   
 c)  $\text{CH}_3\text{CH}_2\text{Br}$                         d)  $\text{C}_6\text{H}_5\text{CH}_2\text{N}_2^+\text{X}^-$
28. Which of the following will be the most stable diazonium salt ( $\text{RN}_2^+\text{X}^-$ )?  
 a)  $\text{CH}_3\text{N}_2^+\text{X}^-$                         b)  $\text{C}_6\text{H}_5\text{N}_2^+\text{X}^-$   
 c)  $\text{CH}_3\text{CH}_2\text{N}_2^+\text{X}^-$                 d)  $\text{C}_6\text{H}_5\text{CH}_2\text{N}_2^+\text{X}^-$
29. Which of the following bases is not present in DNA?  
 a) Adenine                                b) Guanine  
 c) Cytosine                                d) Uracil
30. Which one of the following is a polyamide polymer?  
 a) Terylene                                b) Nylon – 6, 6  
 c) Buna – S                                d) Bakelite
31. In F.C.C the cell is shared equally by how many unit cells?  
 a) 10                                        b) 8  
 c) 6                                         d) 2
32. At a particular temperature, the ratio of molar conductance to specific conductance of 0.01 M NaCl solution is  
 a)  $10^5 \text{ cm}^3 \text{ mol}^{-1}$                       b)  $10^3 \text{ cm}^3 \text{ mol}^{-1}$   
 c)  $10 \text{ cm}^3 \text{ mol}^{-1}$                         d)  $10^5 \text{ cm}^2 \text{ mol}^{-1}$
33. Isotonic solutions are solutions having the same  
 a) Surface tension                      b) Vapour pressure  
 c) Osmotic pressure                    d) Viscosity

34. The temperature coefficient of a reaction is 2. When the temperature is increased from  $30^{\circ}\text{C}$  to  $90^{\circ}\text{C}$ , the rate of reaction is increased by
- a) 150 times                      b) 410 times  
c) 72 times                        d) 64 times
35. Gold sol is not a
- a) Lyophobic sol  
b) Negatively charged sol  
c) Macromolecular sol  
d) Multimolecular sol
36. The common impurity present in bauxite is
- a)  $\text{CuO}$                               b)  $\text{ZnO}$   
c)  $\text{Fe}_2\text{O}_3$                          d)  $\text{Cr}_2\text{O}_3$
37. Very pure  $\text{N}_2$  can be obtained by
- a) Thermal decomposition of ammonium dichromate  
b) Treating aqueous solution of  $\text{NH}_4\text{Cl}$  and  $\text{NaNO}_2$   
c) Liquefaction and fractional distillation of liquid air  
d) Thermal decomposition of sodium azide
38. Which of the following oxidation states is common for all lanthanides?
- a) +2                                  b) +3  
c) +4                                  d) +5
39. The electronic configuration of transition element "X" is +3, oxidation state is  $[\text{Ar}]3d^5$ , what is its atomic number?
- a) 25                                  b) 26  
c) 27                                  d) 24
40. n-Propyl chloride reacts with sodium metal in dry ether to give
- a)  $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$   
b)  $\text{CH}_3-\text{CH}_2-\text{CH}_3$   
c)  $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_3$   
d)  $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$
41. When the vapours of tertiary butyl alcohol are passed through heated copper at  $573\text{K}$ , the product formed is
- a) But-2-ene                      b) 2-Butanone  
c) 2-Methyl propene          d) Butanal
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
43. Which of the following is more basic than aniline?
- a) Diphenylamine                b) Triphenylamine  
c) p-Nitroaniline                d) Benzylamine
44. The two forms of D-Glucopyranose are called
- a) Diastereomers                b) Anomers  
c) Epimers                         d) enantiomers
45. Among the following, the branched chain polymer is
- a) Polyvinyl chloride          b) Bakelite  
c) Low density polythene  
d) High density polythene
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
47. Which of the following is not a conductor of electricity?
- a) Solid  $\text{NaCl}$                       b)  $\text{Cu}$   
c) Fused  $\text{NaCl}$                     d) Brine solution
48. For a cell reaction involving two electron changes,  $E_{\text{cell}}^0 = 0.3\text{V}$  at  $25^{\circ}\text{C}$ . The equilibrium constant of the reaction is
- a)  $10^{-10}$                           b)  $3 \times 10^{-2}$   
c) 10                                  d)  $10^{10}$
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

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

- The chain length of organosilicon polymers can be controlled by adding  $(\text{CH}_3)_3\text{SiCl}$
- $(\text{CH}_3)_3\text{SiCl}$  does not block the end terminal of silicone polymer
- $(\text{CH}_3)_3\text{SiCl}$  does not block end terminal of silicone polymer
- $(\text{CH}_3)_3\text{SiCl}$  acts as a catalyst during polymerisation

51. When  $\text{PbO}_2$  reacts with concentrated  $\text{HNO}_3$  the gas evolved is

- $\text{NO}_2$
- $\text{O}_2$
- $\text{N}_2$
- $\text{N}_2\text{O}$

52.  $\text{KMnO}_4$  acts as an oxidizing agent in alkaline medium. When alkaline  $\text{KMnO}_4$  is treated with  $\text{KI}$ , iodide ion is oxidized is

- $\text{I}_2$
- $\text{IO}^-$
- $\text{IO}_3^-$
- $\text{IO}_4^-$

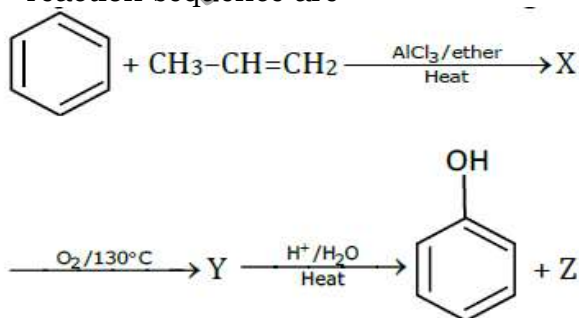
53.  $[\text{Fe}(\text{NO}_2)_3\text{Cl}_3]$  and  $[\text{Fe}(\text{O}-\text{NO})_3\text{Cl}_3]$  shows

- Linkage isomerism
- Geometrical isomerism
- Optical isomerism
- Hydrate isomerism

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

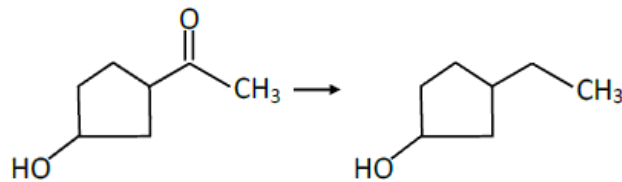
- Insolubility
- Instability
- Inductive effect
- Steric hindrance

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



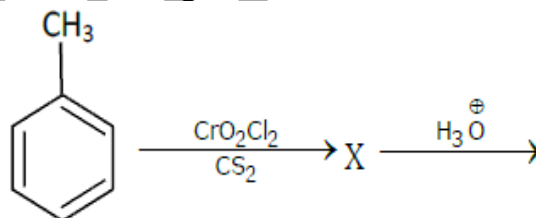
- Isopropyl benzene and acetone
- Cumene peroxide and acetone
- Isopropyl benzene and isopropyl alcohol
- Phenol and acetone

56. The appropriate reagent for the following transformation is



- $\text{Zn} - \text{Hg}/\text{HCl}$
- $\text{H}_2\text{N}-\text{NH}_2$ ,  $\text{KOH}$ / ethylene glycol
- $\text{N}_2/\text{H}_2$
- $\text{NaBH}_4$

57. In the following reaction



The compound Z is

- Benzoic acid
- Benzaldehyde
- Acetophenone
- Benzene

58. The reaction of Benzene diazonium chloride with yields yellow dye. The name of the yellow dye is

- p - Hydroxyazobenzene
- p - Aminoazobenzene
- p - Nitroazobenzene
- o - Nitroazobenzene

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

- $\text{C}_1 - \text{C}_4\beta$  - linkage
- $\text{C}_1 - \text{C}_6\alpha$  - linkage
- $\text{C}_1 - \text{C}_6\beta$  - linkage
- $\text{C}_1 - \text{C}_4\alpha$  - linkage

60. Ziegler - Natta catalyst is used to prepare

- Low density polythene
- Teflon
- High density polythene
- Nylon - 6

**ANSWER KEYS**

1. (b)	2. (c)	3. (a)	4. (b)	5. (c)	6. (b)	7. (d)	8. (c)	9. (b)	10. (c)
11. (a)	12. (a)	13. (c)	14. (b)	15. (a)	16. (d)	17. (b)	18.(b)	19. (b)	20. (d)
21. (a)	22. (c)	23. (a)	24. (a)	25. (a)	26. (a)	27. (a)	28. (b)	29.(d)	30. (b)
31. (c)	32. (a)	33. (c)	34. (d)	35.(c)	36. (c)	37. (d)	38. (b)	39. (b)	40. (a)
41. (c)	42. (c)	43. (d)	44. (b)	45. (c)	46. (c)	47. (a)	48.(d)	49. (c)	50. (a)
51. (b)	52. (c)	53. (a)	54. (d)	55. (a)	56. (b)	57. (b)	58. (b)	59. (d)	60. (c)

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