CHEMISTRY

BOOKS - KCET PREVIOUS YEAR PAPERS

KARNATAKA 2016

Chemistry

1. The half-life period of a 1st order reaction is 60 minutes. What percentage will be left over after 240 minutes ?

A. 0.0625

B. 0.0425

C. 0.05

D. 0.06

Answer: a

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2. Which of the following is not a colligative property

?

A. Osmotic pressure

B. Optical activity

C. Depression in freezing point

D. Elevation in boiling point

Answer: b

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3. The contribution of particle at the edge centre to a particular unit cell is,

A. $\dfrac{1}{2}$

B. $\dfrac{1}{4}$

C. 1

D. $\dfrac{1}{8}$

Answer: b

4. When an electrolyte is dissociated in solution, the van.t Hoffs factor (i) is ,

A. gt1

B. lt1

C. =0

D. =1

Answer: a

5. Which of the following is incorrect in a galvanic cell ?

A. Oxidation occurs at anode .

B. Reduction occurs at cathode

C. The electrode at which electron are gained is called cathode

D. The electrode at which electron are lost is called cathode

Answer: d

6. A secondary cell is one

    A. can be recharged

    B. can be recharged by passing current through it

       in the same direction

    C. can be recaharged by passing current through it

       in the oppsosite direction

    D. cannt be recharged

Answer: c

7. Osmotic pressure of the solution can be increased

by,

    A. increasing the temperature of the solution

    B. decreasing the temperature of the solution

    C. increasing the volume of the vessel

    D. diluting the solution

Answer: a

8. The amount of current in Faraday is required for the reduction of 1 mol of $Cr_2O_7^{2-}$ ions to Cr^{3+} is ,

A. 1F

B. 2Ff

C. 6F

D. 4Ff

Answer: c

9. For a chemical reaction,

$mA \rightarrow xB$, the rate law is $r = k[A]^2$. If the concentration of A is doubled, the reaction rate will be

A. doubled

B. quandrupled

C. increased by 8 times

D. uncharged

Answer: b

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10. Schottky defect in a crystal is observed when,

A. unequal number of cations and anions are missing from the lattice

B. equal number of cations ans anions are missing from the lattice

C. an ion leaves its normal site and occupies an intersitial site

D. no ions is missing from its lattice site .

Answer: b

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11. $3A \, to \, 2B$,rate of reaction $+ \dfrac{d[B]}{dt}$ is equal to

A. $-\dfrac{3}{2}\dfrac{d[A]}{dt}$

B. $-\dfrac{2}{3}\dfrac{d[B]}{dt}$

C. $+2\dfrac{d[A]}{dt}$

D. $-\dfrac{1}{3}\dfrac{d[A]}{dt}$

Answer: b

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12. The activation energy of a chemical reaction can be

determined by,

A. evaluating rate constant at two different temperatures

B. changing the concentration of reactants

C. evaluating the concentration of reactants at two different temperatures

D. evaluating rate consntant at standard temperature

Answer: a

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13. Which of the following statements is incorrect w.r.t. physisorption?

   A. The forces involved are van der Waals' forces.

   B. More easily liquifiable gases are adsorbed easily.

   C. Under high pressure it results into multi - molecular layer on adsorbent

   D. $\Delta H_{adsorption}$ is low and +ve

Answer: d

14. Sulphur sol contains

A. discrete S- atoms

B. discrete S - molecules

C. large aggregates of S - molecules

D. water dispersed in solid sulphur.

Answer: c

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15. Reactions in Zeolite catalyst depend on,

A. pores

B. apertures

C. size of cavity

D. all of these

Answer: d

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16. Replacement of Cl of Chlorobenzene to give phenol requires drastie conditions, but Cl of 2, 4 -dinitro chlorobenzene is readily replaced. This is because,

A. $-NO_2$ group makes the ring electron rich at ortho and para positions

B. $-NO_2$ group withdraws electrons from meta

position

C. $-NO_2$ donates electron at meta position
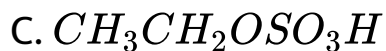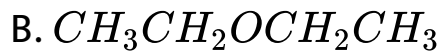
D. $-NO_2$ with drows electrons from ortho and

para positions.

Answer: d

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17. In the reaction :

Ethnol

$$\xrightarrow{PCl_5} X \xrightarrow{\text{alc KOH}} Y \xrightarrow[\text{H\_2 O\_2 Delta)overset(H\_2 SO\_4. } R\infty mtemp.]{} Z$$

, the product Y is,

A. C_2H_4

B. $CH_3CH_2OCH_2CH_3$

C. $CH_3CH_2OSO_3H$

D.
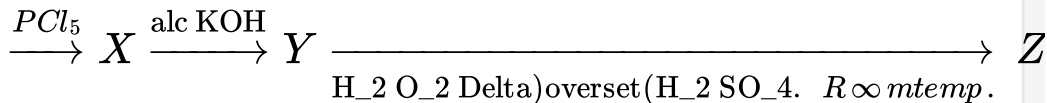
Answer: d

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18. Which of the following compound is most acidic ?

A. $Cl - CH_2 - CH_2 - OH$

B.

C.

D.
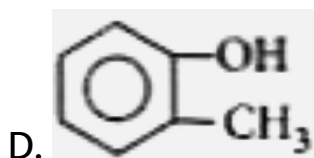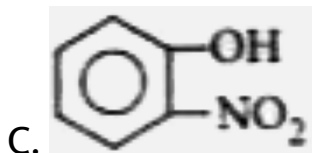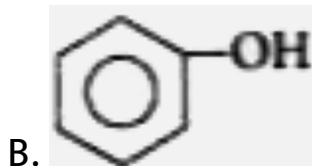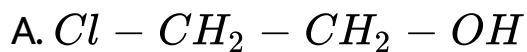
Answer: c

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19. Benzene carbaldehyde is reacted with concentrated NaOH solution to give the products A

and B. The product A can be used food preservative and the product B is an aromatic hydroxy compound where OH group is linked to sp^3 hybridised carbon atom next to Benzene ring. The products A and B are respectively,

    A. Sodium benzoate and phenol

    B. sodium benzoate and phenyl methanol

    C. sodium benzoate and cresol

    D. sodium benzoate and picric acid.

Answer: a

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20. The reaction which involves dichlorocarbene as an electrophile is,

    A. Reimer - Tiemann reaction

    B. Kolbe's reaction

    C. Friedel - Crafts' acylation

    D. Fittig's reaction

Answer: a

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21. Ethanol is converted into ethoxyethane

A. by heating excess of ethanol with conc. H_2SO_4 at $140°$

B. by heating ethanol with excess of conc. H_2SO_4 at 443K

C. by treating with conc. H_2SO_4, at room temperature

D. by treating with conc. H_2SO_4 at 273K.

Answer: a

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22. An organic compound X is oxidised by using acidified $K_2Cr_2O_7$ solution. The product obtained reacts with phenyl hydrazine but does not answer silver mirror test. The compound X is

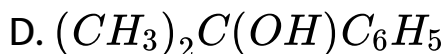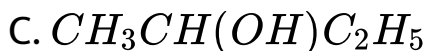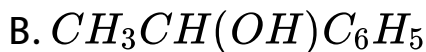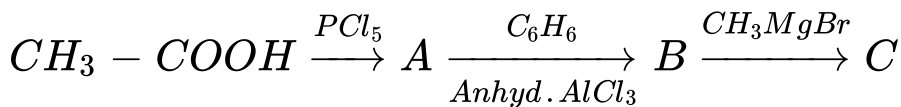   A. 2- Propanol

    B. ethanal

    C. ethanol

    D. $CH_3CH_2CH_3$

Answer: a

23. Predict the product in the following series of reactions :

$$CH_3 - COOH \xrightarrow{PCl_5} A \xrightarrow[Anhyd.AlCl_3]{C_6H_6} B \xrightarrow{CH_3MgBr} C$$

A. $CH_3CH_2CH(OH)C_6H_5$

B. $CH_3CH(OH)C_6H_5$

C. $CH_3CH(OH)C_2H_5$

D. $(CH_3)_2C(OH)C_6H_5$

Answer: d

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24. The number of oxygen atoms in 4.4g of CO_2 is

A. 1.2×10^{23}

B. 6×10^{22}
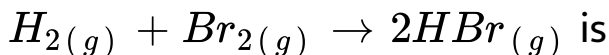
C. 6×10^{23}

D. 12×10^{23}

Answer: a

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25. If the bond energies of H-H, Br-Br and H-Br are 433, 192 and 364 kJ mol^{-1} respectively, then ΔH° for the reaction :

$H_{2(g)} + Br_{2(g)} \rightarrow 2HBr_{(g)}$ is

A. $-261 KJ$

B. $+103 KJ$

C. $+261 KJ$

D. $-103 KJ$

Answer: d

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26. In the reaction, $Fe(OH)_3 \Leftrightarrow Fe^{3+}_{aq} + 3OH^-_{aq}$ if the concentration of OH^- ions is decreased by $\dfrac{1}{4}$ times , then the equilibrium concentration of Fe^{3+} will increases by

A. 8 times

B. 16 times

C. 64 times

D. 4 times

Answer: c

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27. The correct statement regarding entropy is,

A. at absolute zero temperature, entropy of a

perfectly crystalline solid is zero

B. at absolute zero temperature, the entropy of a
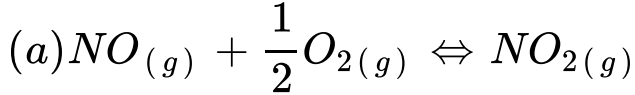
perfectly crystalline substance is + ve

C. at absolute zero temperature, the entropy of 9

all crystalline substances is zero

D. at $0°C$ the entropy of a perfect crystalline solid

is zero

Answer: a

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28. Equilibrium constants K_1 and K_2 for the

following equilibria

$(a) NO_{(g)} + \dfrac{1}{2}O_{2(g)} \Leftrightarrow NO_{2(g)}$

(b) $2NO_{2(g)} \Leftrightarrow 2NO_{(g)} + O_{2(g)}$ are related as :

A. $K_1\sqrt{K_2}$

B. $K_2 = \dfrac{1}{K_1}$

C. K_12K_2

D. $Kk_2 = \dfrac{1}{K_1^2}$

Answer: d

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29. Van-Arkel method of refining Zirconium involves,

A. removing all oxygen and nitrogen impurities

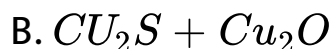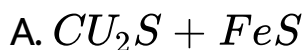B. removing CO impurity

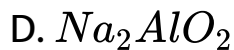C. removing hydrogen impurity
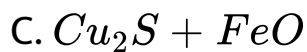
D. removing silica impurity I

Answer: a

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30. The composition of .copper matte. is,

A. $CU_2S + FeS$
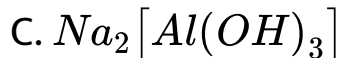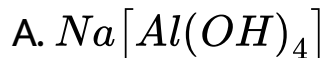
B. $CU_2S + Cu_2O$

C. $Cu_2S + FeO$

D. Na_2AlO_2

Answer: a

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31. The complex formed when Al_2O_3 is leached from Bauxite using concentrated NaOH solution is,

A. $Na[Al(OH)_4]$

B. $NaAl_2O_4$

C. $Na_2[Al(OH)_3]$

D. Na_2AlO_2

Answer: a

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32. The property which is not true about fluorine is

A. most of its reactions are exothermic

B. it forms only one oxo acid

C. highest electronegativity

D. high F - F bond dissociation enthalpy.

Answer: d

33. Which is true regarding nitrogen?

A. Less electronegative

B. Has low ionisation enthalpy

C. d - orbitals are available

D. Ability to form p pi - p pi bonds with itself

Answer: d

34. The shape of XeF_6 is

A. square planar

B. distorted octahedral

C. square pyramidal

D. pyramidal

Answer: b

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35. The number of isomeres possible for the octahedral complex $\left[CoCl_2(en)(NH_3)_2\right]^+$ is

A. two

B. three

C. no isomer

D. four isomers

Answer: d

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36. CO is a stronger ligand than Cl^- because

A. Co is a neutral molecule

B. Co has π - bonds

C. Co is poisonous

D. CO is more reactive

Answer: b

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37. The bivalent metal ion having maximum paramagnetic behavior among the first transition series element is
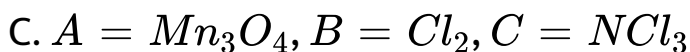
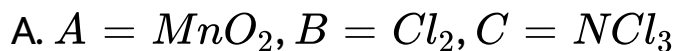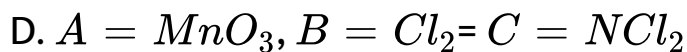A. Mn^{2+}

B. Cu^{2+}

C. Sc^{2+}

D. Cu^+

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38. When a brown compound of Mn (A) is treated with HCl, it gives a gas (B). The gas (B) taken in excess reacts with NH_3 to give an explosive compound (C). The compounds A, B and C are

A. $A = MnO_2, B = Cl_2, C = NCl_3$

B. A= MnO, $B = Cl_2, C = NH_3Cl$

C. $A = Mn_3O_4, B = Cl_2, C = NCl_3$

D. $A = MnO_3, B = Cl_2 = C = NCl_2$

Answer: a

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39. Mn^{2+} compounds are more stable than Fe^{2+} compounds towards oxidation to their +3 state, because

A. Mn^{2+} is more stable with high 3rd ionisation

   energy

B. Mn^{2+} is bigger in size

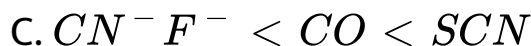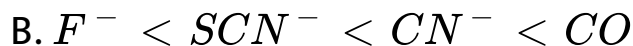C. Mn^{2+} has completely filled d- orbitals

D. Mn^{2+} does not exist

Answer: a

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40. Which of the following sequence is correct regarding field strength of ligands as per spectrochemical series?

A. $SCN^- < F^- < CN^- < CO$

B. $F^- < SCN^- < CN^- < CO$

C. $CN^- F^- < CO < SCN$

D. $SCN^- < CO < F^- < CN^-$

Answer: a

**41.** As per IUPAC norms, the name of the complex $[Co(en)_2(ONO)Cl]Cl$ is

A. Chloridobis (ethane - 1,2 - diamine) nitro - O. cobalt (III) chloride.

B. Chlorobis (ethylenediamine)) nitro - O - cobalt (III) chloride

C. Chloridodi (ethylene diamine) nitrocobalt (III) chloride.

D. Chloroethylenediaminenitro - O cobalt (III) 1

chloride

Answer: a

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42. In the following sequence of reactions ,

$$A \xrightarrow{\text{Reduction}} B \xrightarrow{HNO_2} CH_3CH_2OH$$
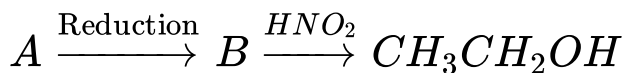
The compound A is

A. propane nitirile

B. thane nitrile

C. nitromethane

D. methyl isocyanate

Answer: b

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43. An organic compound .A. on reduction gives compound .B., which on reaction with trichloro methane and caustic potash forms .C.. The compound .C. on catalytic reduction gives N-methyl benzenamine, the compound .A. is,

A. nitrobenzene

B. nitromethane

C. methane

D. benzenamine

Answer: a

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44. Which of the following gives positive Fehling.s solution test ?

A. Sucrose

B. Glucose

C. Fats

D. protein

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45. A liquid can exist only,

    A. between triple point and critical point

    B. at any temperature above melting point

    C. between melting point and critical point

    D. between boiling and melting points

46. The energy of electron in the nth Bohr orbit of H-atom is

A. $\dfrac{-13.6}{n^2 eV}$

B. $\dfrac{-13.6}{n} eV$

C. $\dfrac{-13.6}{n^4 eV}$

D. $\dfrac{-13.6}{n^3} eV$

Answer: a

47. Consider the following sets of quantum numbers:

Which of the below setting is not permissible arrangement of electrons in an atom?

A. $4\ 0\ 0 - \dfrac{1}{2}$

B. $5\ 4\ 0 + \dfrac{1}{2}$

C. $3\ 3\ \text{-}2 - \dfrac{1}{2}$

D. $3\ 2\ \text{-}3 + \dfrac{1}{2}$

Answer: d
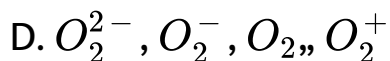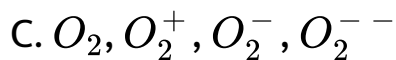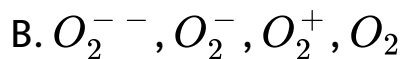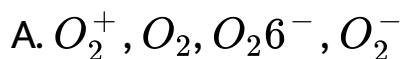
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48. Arrange the following in the increasing order order of their bond order : O_2, O_2^+, O_2^- and O_2^{2-} :

A. $O_2^+, O_2, O_26^-, O_2^-$

B. $O_2^{--}, O_2^-, O_2^+, O_2$

C. $O_2, O_2^+, O_2^-, O_2^{--}$

D. $O_2^{2-}, O_2^-, O_{2,}, O_2^+$

Answer: d

49. HCl gas is covalent and NaCl is an ionic compound.

This is because

    A. Sodium is highly electropositive

    B. hydroge is a non - metal

    C. HCl is a gas

    D. electronegativity difference between H and Cl is

       less than 2.1

Answer: b

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50. Which of the following is not true?

A. in vulcanisation the rubber becomes harder and

stronger.

B. Natural rubber has trans configuration at every

double bond

C. Buna - S is a co- polymer of butene and styrene .

D. Natural rubber is 1,4- polymerr of isoprene .

Answer: a

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51. Which of the following is a polyamide ?

A. Nylon -6,6

B. terylene

C. Polythene

D. Buna - S

Answer: a

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52. Which of the following is correct about H- bonding

is DNA ?

A. A- T, G-C

B. A-G, T-G

C. G-T, A-C

D. A-A, T-T

Answer: a

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53. Which of the following is employed as Tranquilizer?

A. Equanil

B. Naproxen

C. Tentracylin

D. Dettol

Answer: a

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54. Reactivity of order of halides for dehydrohalogenation is

A. R- Fgt R-Clgt R-Brgt R-I

B. R- I gt R-Brgt R-Clgt R-F

C. R-Igt R-Clgt R-Brgt R-F

D. R=-Fgt Rgt-I gt R-brgt R-Cl

Answer: b

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55. Main axis of diatomic molecule is Z. The orbitals P_x

and P_y overlap to form

A. Π - molecular orbital

B. σ - molecualr orbital

C. δ- molecular orbital

D. no nond is formed

Answer: d

56. The hybridisation of C in diamond, graphite and ethyne is in the order

A. SP^3, Sp, Sp^2

B. Sp^3, Sp^2, Sp

C. Sp, Sp^2, Sp^3

D. Sp^2, SP^3, Sp

Answer: b

57. A miscible mixture of $C_6H_6 + CHCl_3$ can be separated by
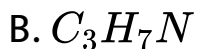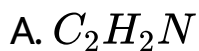
    A. sublimation

    B. distillation

    C. filtraion

    D. crystallisation

Answer: b

58. An organic compound contains C = 40%, H = 13.33% and N-46.67%. Its emperical formula is

A. C_2H_2N

B. C_3H_7N

C. CH_4N

D. CHN

Answer: c

59. Electrophile that participates in nitration of benzene is

A. NO^+

B. NO_2^+

C. No

D. NO_3^-

Answer: b

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