CHEMISTRY

BOOKS - KCET PREVIOUS YEAR PAPERS

KARNATAKA CET 2012

Chemistry

1. A first order reaction is 60% complete in 20 minutes . How long will the reaction take to be 84% complete ?

A. 54 mins

B. 68 mins

C. 40 mins

D. 76 mins

Answer: C

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2. A given sample of milk turns sour at room temperature $(27^\circ C)$ in 5 hours . In a refrigerator

at $-3°C$, it can be stored 10 times longer . The energy of activation for the souring of milk is

A. $2.303 \times 10RkJ \cdot mol^{-1}$

B. $2.303 \times 5RkJ \cdot mol^{-1}$

C. $2.303 \times 3RkJ \cdot mol^{-1}$

D. $2.303 \times 2.7RkJ \cdot mol^{-1}$

Answer: D

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3. At 300 K a gaseous reaction $A \to B + C$ was found to follow first order kinetics . Starting with pure A the total pressure at the end of 20 minutes was 100 mm of Hg . The total pressure after the completion of the reactionn is 180 mm of Hg . The partial pressure of A (in mm of Hg) is :

    A. 100

    B. 90

    C. 180

    D. 80

Answer: D

4. From the Ellingham graphs on carbon , which of the following statements is false ?

A. CO_2 is more stable than CO at less than 983 K

B. CO reduces Fe_2O_3 to Fe at less than 983 K

C. CO is less stable than CO_2 at more than 983 K

D. CO reduces Fe_2O_3 to Fe in the reduction

zone of Blast furnace

Answer: C

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5. Which of the following is a negatively charged

bidentate ligand ?

A. Dimethyl glyoximato

B. Cyano

C. Ethylene diamine

D. Acetato

Answer: A

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6. The secondary valency of platinum in tetraamminedichloroplatinum (IV) chloride is :
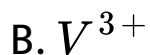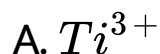
A. $+4$

B. $+2$

C. 3

D. 6

Answer: D

7. Which one of the following has a magnetic moment of 1.75 B.M ?

A. Ti^{3+}

B. V^{3+}

C. Cr^{3+}

D. Fe^{3+}

Answer: A

8. The correct order of ionisation enthalpy of C, N, O, F is

A. $F < N < C < O$

B. $C < N < O < F$

C. $C < O < N < F$

D. $F < O < N < C$

Answer: C

9. The correct set of four quantum numbers for the outermost electron of sodium (Z=11) is

A. $3, 1, 0, \dfrac{1}{2}$

B. $3, 1, 1, \dfrac{1}{2}$

C. $3, 2, 1, \dfrac{1}{2}$

D. $3, 0, 0, \dfrac{1}{2}$

Answer: D

10. The ore that is concentrated by froth floatation process is

    A. Chalcopyrites

    B. Cryolite

    C. Cuprite

    D. Calamine

Answer: A

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11. The equivalent mass of a certain bivalent metal is 20 . The molecular mass of its anhydrous chloride is

A. 91

B. 111

C. 55.5

D. 75.5

Answer: B

12. 2 moles of $N_2O_{4(g)}$ is kept in a closed container at 298 K and under 1 atm pressure . It is heated to 596 K when 20% by mass of $N_2O_{4(g)}$ decomposes to NO_2 . The resulting pressure is

A. 2.4 atm

B. 1.2 atm

C. 4.8 atm

D. 2.8 atm

Answer: A

13. Sucrose is not a reducing sugar since

A. it is chemically stable

B. it contains no free aldehyde or keto group

adjacent to a $>CHOH$ group

C. it is built up of a fructose unit

D. it is optically active

Answer: B

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14. Among the following, the compound that contains ionic, covalent and co-ordinate linkage is

A. NaOH

B. NaCl

C. NaCN

D. NaNC

Answer: D

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15. Dialysis can be used to separate

A. glucose and fructose

B. protein and strach

C. glucose and protein

D. glucose and NaCl

Answer: C

16. The percentage of p-character of the hybrid orbitals in graphite and diamond are respectively.

A. 33 and 25

B. 50 and 75

C. 67 and 75

D. 33 and 75

Answer: C

17. A gas expands from a volume of $1m^3$ to a volume of $2m^3$ against an external pressure of $10^5 Nm^{-2}$. The work done by the gas will be

A. 10^5 kJ

B. 10^2 kJ

C. 10^2 J

D. 10^3 J

Answer: B

18. The mass of a non-volatile solute of molar mass 40g mol^{-1} that should be dissolved in 114 g of octane to lower its vapour pressure by 20% is :

A. 10 g

B. 11.4 g

C. 9. 8 g

D. 12.8 g

Answer: A

19. During the adsorption of a gas on the surface of a solid , which of the following is true ?

A. $\Delta G < 0, \Delta > 0, \Delta S < 0$

B. $\Delta G > 0, \Delta H < 0, \Delta S < 0$

C. $\Delta G < 0, \Delta H < 0, \Delta S < 0$

D. $\Delta G < 0, \Delta H < 0, \Delta S > 0$

Answer: C

20. The approximate time duration in hours to electroplate 30 g of calcium from molten calcium chloride using a current of 5 amp is

[At., mass of Ca = 40]

A. 8

B. 80

C. 10

D. 16

Answer: A

21. The pH of the solution obtained by mixing 100 mL of a solution of pH = 3 with 400 mL of a solution of pH = 4 is

A. 3 - log 2.8

B. 7- log 2.8

C. 4- log 2.8

D. 5- log 2.8
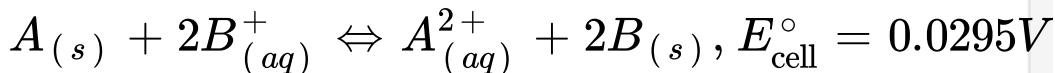
Answer: C

22. The equilibrium constant of the reaction :

$$A_{(s)} + 2B^+_{(aq)} \Leftrightarrow A^{2+}_{(aq)} + 2B_{(s)}, E^\circ_{cell} = 0.0295V$$

is $\left[\dfrac{2.303RT}{F} = 0.059 \right]$

A. 10

B. 2×10^2

C. 3×10^2

D. 2×10^5

Answer: A

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23. An oxygen containing organic compound was found to contain 52% carbon and 13 % of hydrogen . Its vapour density is 23 . The compound reacts with sodium metal to liberate hydrogen . A functional isomer of this compound is

A. Ethanol

B. Ethanal

C. Methoxy methane

D. Methoxy ethane

Answer: C

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24. Which one of the following is not true regarding electromeric effect ?

A. It results in the appearance of partial charges on the carbon atoms.

B. It is a temporary effect .

C. It operates on multiple bonds .

D. It requires an attacking reagent .

Answer: A

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25. Which one of the following is not formed when a mixture of methyl bromide and

bromobenzene is heated with sodium metal in the presence of dry ether ?

A. Ethane

B. Diphenyl

C. Propane

D. Toluene

Answer: C

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26. Power alcohol is a mixture of

A. 80 % Petrol + 20 % Benzene + Small

quantity of Ethanol

B. 80 % Petrol + 20 % Ethanol + Small

quantity of Benzene

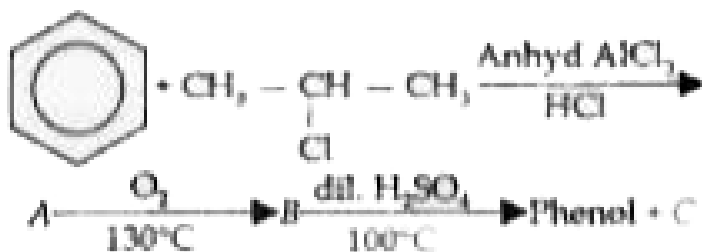C. 80 % Ethanol + 20 % Benzene + Small

quantity of Petrol

D. 50 % Petrol + 50 % Ethanol + Small

quantity of Benzene

Answer: B

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27. Identify 'C' in the following

A. Water

B. Ethanol

C. Propanone

D. Cumene Hydroperoxide

Answer: C

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28. 20 mL of methane is completely burnt using 50 mL of oxygen . The volume of the gas left after cooling to room temperature is

A. 80 mL

B. 40 mL

C. 60 mL

D. 30 mL

Answer: D

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29. 100 mL of 0.1 M acetic acid is completely neutralized using a standard solution of NaOH . The volume of ethane obtained at STP after the complete electrolysis of the resulting solution is

A. 112 mL

B. 56 mL

C. 224 mL

D. 560 mL

Answer: A

30. Saccharin , an artificial sweetener , is manufactured from

    A. Cellulose

    B. Toluene

    C. Cyclohexane

    D. Starch

Answer: B

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31. Which of the following is not true for S_N1 reaction ?

A. Favoured by polar solvents

B. $3°$ - alkyl halides generally react through S_N1 reaction

C. The rate of the reaction does not depend upon the molar concentration of the nucelophile .

D. $1°$ - alkyl halides generally react through S_N 1 reaction .

Answer: D

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32. Oil of winter green is

A. an ester

B. a carboxylic acid

C. an alcohol

D. a ketone

Answer: A

33. An organic compound 'A' burns with a sooty flame . It is negative towards Tollen's reagent test and positive for Borsche's reagent test . The compound 'A' is

    A. Benzaldehyde

    B. Acetophenone

    C. Acetone

    D. Salicylic acid

Answer: B

34. For a reaction : $A \rightarrow B \rightarrow$ Products , the rate of the reaction at various concentrations are given below :

Expt No	[A]	[B]	rate (mol dm^{-3} s^{-1})
1	0.2	0.2	2
2	0.2	0.4	4
3	0.6	0.4	36

The rate law for the above reaction is

A. A) $r = k[A]^2[B]$

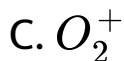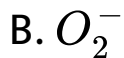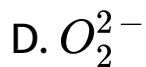B. B) $r = k[A][B]^2$

C. C) $r = k[A]^3[B]$

D. D) $r = k[A]^2[B]^2$

Answer: A

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35. Which one of the following has no unpaired electrons ?

A. O_2

B. O_2^-

C. O_2^+

D. O_2^{2-}

Answer: D

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36. The atomic number of cobalt is 27 . The EAN

of cobalt in $Na_3 [Co(NO_2)_4 Cl_2]$ is

A. 35

B. 24

C. 36

D. 34

Answer: C

37. The "spin only" magnetic moment of Ni^{2+} in aqueous solution would be [At No. of Ni = 28]

A. $\sqrt{6}$ B.M

B. $\sqrt{15}$ B.M

C. $\sqrt{2}$ B.M

D. $\sqrt{8}$ B.M

Answer: D

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38. Impossible orbital among the following is

A. 2s

B. 3f

C. 2p

D. 4d

Answer:

39. The total number of electrons in 18 mL of water (density = 1 g mL^{-1}) is

    A. 6.02×10^{23}

    B. 6.02×10^{25}

    C. 6.02×10^{24}

    D. $6.02 \times 18 \times 10^{23}$

Answer:

40. The number of moles of hydrogen that can be added to 1 mole of an oil is the highest in

    A. Linseed oil

    B. Groundnut oil

    C. Sunflower seed oil

    D. Mustard oil

Answer:

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41. The reaction between sodium and water can be made less vigorous by

    A. lowering the temperature

    B. adding a little alcohol

    C. amalgamating sodium

    D. adding a little acetic acid

Answer:

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42. All colloidal dispersions have

    A. very high osmotic pressure

    B. low osmotic pressure

    C. no osmotic pressure

    D. high osmotic pressure

Answer:

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43. Silver iodide is used for producing artificial rain because AgI

    A. is easy to spray at high altitude

    B. is easy to synthesize

    C. has crystal structure similar to ice

    D. is insoluble in water

Answer:

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44. The equilibrium constant of a reaction is

0.008 at 298 K. The standard free energy change

of the reaction at the same temperature is :

A. $+11.96$ kJ

B. $-11.96 kJ$

C. -5.43 kJ

D. -8.46 kJ

Answer:

45. Function of potassium ethylxanthate in froth floatation process is to make the ore

    A. attracted towards water

    B. water repellant

    C. lighter

    D. heavier

Answer:

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46. The correct order of electronegativities of N,O,F and P is

A. $F > N > P > O$

B. $F > O > P > N$

C. $F > O > N > P$

D. $N > O > F > P$

Answer:

47. The s-block element used as a catalyst in the manufacture of Buna-S rubber is

A. Mg

B. Ca

C. Ba

D. Na

Answer:

48. Which of the following is not a characteristic of a covalent compound ?

A. Low melting point

B. No definite geometry

C. Insoluble in polar solvent

D. Small difference in electronegativity between the combining atoms .

Answer:

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49. The volume of 0.1 M oxalic acid that can be completely oxidized by 20 mL of 0.025 M $KMnO_4$ solution is

A. 125 mL

B. 25 mL

C. 12.5 mL

D. 37.5 mL

Answer:

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50. A ligand is

    A. Lewis acid

    B. Bronsted acid

    C. either a Lewis acid or a Lewis base

    D. Lewis base

Answer:

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51. The vapour pressures of two liquids A and B in their pure states are in the ratio of $1:2$. A binary solution of A and B contains A and B in the mole proportion of $1:2$. The mole fraction of A in the vapour phase of the solution will be

A. 0.33

B. 0.2

C. 0.25

D. 0.52

Answer:

52. Which of the following statements is true ?

A. The total entropy of the universe remains constant .

B. The total entropy of the universe is continuously decreasing .

C. The total energy of the universe is continuously decreasing .

D. The total energy of the universe remains constant .

Answer:

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53. 5 mL of 0.4N NaOH is mixed with 20 mL of 0.1N HCl. The pH of the resulting solution will be :

A. 6

B. 7

C. 8

D. 5

Answer:

54. On adding which of the following the pH of 20 mL of 0.1 N HCl will not alter ?

A. 1 mL of 1 N HCl
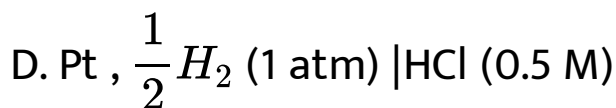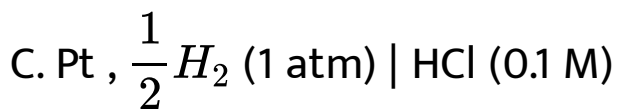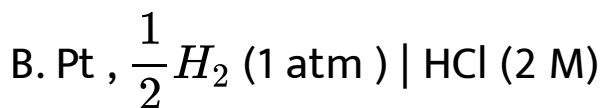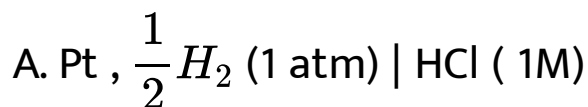
B. 20 mL of distilled water

C. 1 mL of 0.1 N NaOH

D. 500 mL of HCl of pH = 1

Answer:

55. Which one of the following has a potential more than zero ?

A. Pt , $\frac{1}{2} H_2$ (1 atm) | HCl (1M)

B. Pt , $\frac{1}{2} H_2$ (1 atm) | HCl (2 M)

C. Pt , $\frac{1}{2} H_2$ (1 atm) | HCl (0.1 M)

D. Pt , $\frac{1}{2} H_2$ (1 atm) |HCl (0.5 M)

Answer:

56. HCHO was treated with a reagent . The product formed upon hydrolysis in the presence of an acid gave C_2H_5OH . The reagent X is

A. aqueous KOH

B. alcoholic KOH

C. alcoholic KCN

D. CH_3MgI

Answer:

57. Benzylamine is a stronger base than aniline because

A. The lone pair of electrons on the nitrogen atom in benzylamine is delocalised .

B. The lone pair of electrons on the nitrogen atom in aniline is delocalised .

C. The lone pair of electrons on the nitrogen

atom in aniline is not involved in resonance

.

D. Benzylamine has a higher molecular mass

than aniline .

Answer:

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58. The relative acidic strengths of benzoic acid,

o- toluic acid and p- toluic acid is of the

decreasing order :

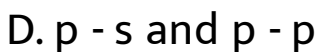A. p- toluic acid > o-toluic acid > benzoic acid

B. o- toluic acid > p-toluic acid > benzoic acid

C. p-toluic acid > benzoic acid > o-toluic acid

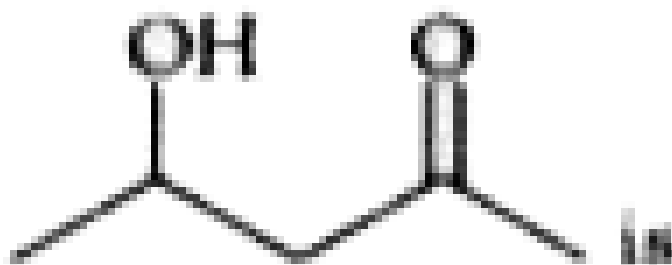D. o-toluic acid > benzoid acid > p- toluic acid

Answer:

59. The C-H bond and C- C bond in ethane are formed by which of the following types of overlap ?

A. $sp^3 - s$ and $sp^3 - sp^3$

B. $sp^2 - s$ and $sp^2 - sp^2$

C. sp - s and sp - sp

D. p - s and p - p

Answer:

60. The IUPAC name of

is

A. 4 - Hydroxy -2 - pentanone

B. 2-Hydroxy - 4-pentanone

C. 2-Oxo-4-pentanol

D. 4-Keto-2-pentanol

Answer:

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