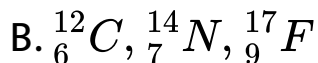# CHEMISTRY

BOOKS - KCET PREVIOUS YEAR PAPERS

MODEL TEST PAPER 02

Chemistry

1. The triad of nuclei that is isotonic is

A. $^{14}_{6}C, {}^{15}_{7}N, {}^{19}_{9}F$

B. $^{12}_{6}C, {}^{14}_{7}N, {}^{17}_{9}F$

C. $^{14}_{6}C, ^{15}_{7}N, ^{9}_{19}C$

D. $^{14}_{6}C, ^{15}_{7}N, ^{17}_{9}F$.
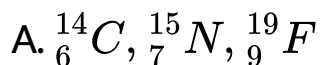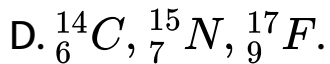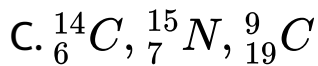
Answer: D

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2. In the metallurgy of iron , when lime stone is added to the blast furnace , the calcium ion ends up in

A. Gangue

B. Metallic calcium

C. Calcium carbonate

D. Slag

Answer: D

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3. Which of the following statements is not true about potash alum ?

A. Its empirical formula is $KAl(SO_4)_2. 12H_2O$

B. Its aqueous solution is basic in nature

C. On heating it melts on its water of crystallization

D. It is used in dyeing industries

Answer: B

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4. Heterolysis of a carbon-chloride bond produces

A. One cation and one anion

B. Two carbonium ion

C. Two carbon ions

D. Two free radicals

Answer: A

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5. PCl_3 on reacting with HCOOH gives

A. Chlorobenzene

B. Acetyl chloride

C. Methyl chloride

D. Formyl chloride

Answer: D

6. In the hydrolytic equilibrium ,

$$A^- + H_2O \Leftrightarrow HA + OH^-$$

$K_a = 1.0 \times 10^{-5}$. The degree of hydrolysis of 0.001 M solution of the salt is

A. 10^{-6}

B. 10^{-4}

C. 10^{-5}

D. 10^{-3}

Answer: D

7. In the reaction , $AlCl_3 + Cl^- = AlCl_4^-$, $AlCl_3$ can be classified as

    A. Acid

    B. Base

    C. Salt

    D. None of these

Answer: A

8. In the reaction $2S_2O_3^{2-} + I_2 \rightarrow S_4O_6^{2-} + 2I^-$.

The eq. wt. of $Na_2S_2O_3$ is equal to its

    A. Mol wt./6

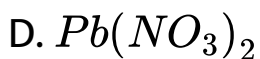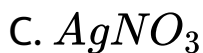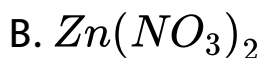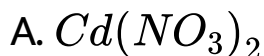   B. Mol wt./2

    C. $2 \times$ mol.wt

    D. Mol wt

Answer: D

9. Four colourless salt solutions are placed in separate test-tubes and a strip of copper is placed in each . Which solution finally turns blue

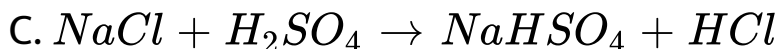A. $Cd(NO_3)_2$

B. $Zn(NO_3)_2$
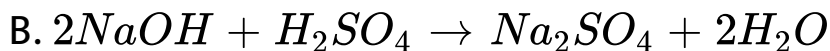
C. $AgNO_3$

D. $Pb(NO_3)_2$

Answer: C

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10. Which reaction indicates the oxidising behaviour of H_2SO_4

A. $2HI + H_2SO_4 \rightarrow I_2 + SO_2 + 2H_2O$

B. $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$

C. $NaCl + H_2SO_4 \rightarrow NaHSO_4 + HCl$

D.

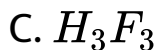$2PCl_5 + H_2SO_4 \rightarrow 2POCl_3 + 2HCl + SO_2Cl_2$
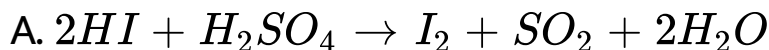
Answer: A

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11. 10 g of hydrochloric acid gas occupies 5.6 litre of volume at STP . The emperical formulae of the gas is HF , then its molecular formula in the gaseous state will be

A. H_4F_4

B. H_2F_2

C. H_3F_3

D. HF
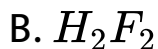
Answer: B

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12. In which of the following process energy is liberated ?

A. $O^- + e \rightarrow O^{2-}$

B. $HCl \rightarrow H^+ + Cl^-$

C. $Cl + e \rightarrow Cl^{-1}$

D. $Cl \rightarrow Cl^+ + e$
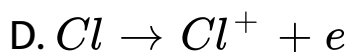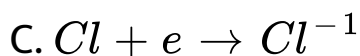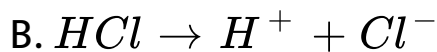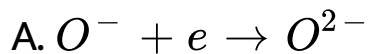
Answer: C

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13. Number of electrons in the nucleus of an element of atomic number 14 is

A. 14

B. 7

C. 7

D. 0

Answer: D

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14. If the concentration of water vapour in the air is 1% and the total atmospheric pressure equals to 1 atm then the partial pressure of water vapours is

A. 100 atm

B. 1mm Hg

C. 7.6 mm Hg

D. 0.1 atm

Answer: C

15. The solubility product of $HgCl_2$ at room temperature is 4.0×10^{-5}. The concentration of Cl^- ion in the saturated solution will be

    A. 9×10^{-15}

    B. 2×10^{-5}

    C. 2×10^{-15}

    D. 1×10^{-5}

Answer: B

16. Bond energy of a molecule

A. Is always positive

B. Either positive or negative

C. Is always negative

D. Depends upon the physical state of the system

Answer: A

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17. If the pH of a solution is 2 , its normality will be

A. 0.5 N

B. 0.01 N

C. 2 N

D. None of these

Answer: D

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18. For the reaction $2HI \Leftrightarrow H_2 + I_2$ the equilibrium constant K at $440°C$ is 0.022 . The

equilibrium constant for $I_2 + H_2 \Leftrightarrow 2HI$ is

A. 45.45

B. 0.050

C. 0.022

D. None of these

Answer: A

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19. For which system at equilibrium , at constant temperature , will the doubling of the volume cause

a shift to the right

A. $PCl_5 \Leftrightarrow PCl_3(g) + Cl_2(g)$

B. $2CO(g) + O_2(g) \Leftrightarrow 2CO_2(g)$

C. $N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$

D. $H_2(g) + Cl_2(g) \Leftrightarrow 2HCl(g)$
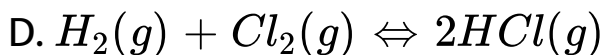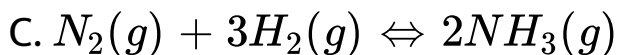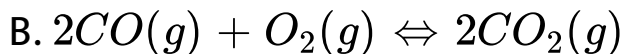
Answer: A

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20. In extracting out the given solute by a given volume of an extracting liquid , the extraction is

more complete if

A. Less number of installment of extracting liquid are used in larger volume taken in each installments.

B. Large numbers of installments of extracting liquid are used in small volumes taken in each installment

C. Whole extracting liquid is used in one operation

D. Any of the above.

Answer: B

21. A solution of sulphuric acid in water exhibits:

A. A) The applicability of Henry's law

B. B) Positive deviation from Raoult's law

C. C) Ideal properties

D. D) Negative deviation from Raoult's law

Answer: D

22. The half life of radioactive element depends upon the

A. Nature of element

B. Temperature

C. Pressure

D. Amount of the element

Answer: A

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23. Passage of 96500 coulomb of electricity liberates. litre of O_2 at NTP during electrolysis

A. 11.2

B. 6.5

C. 22.2

D. 5.6

Answer: D

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24. HBr and HI reduce H_2SO_4, HCI can reduce $KMnO_4$ and HF can reduce

A. $K_2Cr_2O_7$

B. H_2SO_4

C. $KMnO_4$
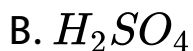
D. None of these

Answer: D

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25. Which is not a molecular formula?

A. N_2O

B. $Ca(NO_3)_2$

C. $C_2H_4O_2$

D. $C_6H_{12}O_6$
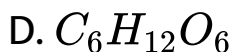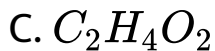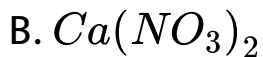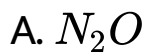
Answer: B

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26. The molecular weight of a gas is 44. The volume occupied at STP by 2.2 g of the gas would be

A. 1.12 litre

B. 2.24 litre

C. 11.2 litre

D. 22.4 litre

Answer: A

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27. $_{90}Th$, a member of III group on losing α-particle

forms a new element belonging to

A. IV group

B. II group

C. III group

D. I group

Answer: B

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28. In Bohr' model of the hydrogen atoms the ratio between the period of revolution on an electron in the orbit n = 1 to the period of revolution of the electron in the orbit n = 2 is

A. $1 : 4$

B. $2:1$

C. $1:8$

D. $1:2$

Answer: B

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29. Which gas is adsorbed by charcoal?

A. A) H_2

B. B) CO

C. C) N_2

D. D) All of these

Answer: D

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30. 2-methyl phenol is

A. m-cresol

B. Catechol

C. p-cresol

D. o-cresol

Answer: D

31. m-chlorobenzaldehyde on reaction with conc. KOH at room temperature gives

    A. Potassium m-chlorobenzoate and m-chlorobenzyl alcohol

    B. m-hydroxybenzaldehyde and m-chloro-benzy! Alcohol

C. m-chlorobenzyalcohol and m-hydroxy benzyl alcohol

D. Potassium m-chlorobenzoate and m-hydroxy benzaldehyde

Answer: A

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32. Nitroalkane is acidic only towards

A. Liquid NH_3

B. NaOH

C. Alcohol

D. Na_2CO_3

Answer: B

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33. Two moles of acetic acid are heated with P_2O_5.

The product formed is

A. Acetic anhydride

B. 2 moles of ethyl alcohol

C. 2 mole of methylcynide

D. Formic anhydride

Answer: A

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34. Two moles of acetic acid are heated with P_2O_5.

The product formed is

A. 4

B. 5

C. 2

D. 3

Answer: A

35. The number of methoxy groups in a compound can be determined by treating it with

    A. Acetic acid

    B. Sodium carbonate

    C. Sodium hydroxide

    D. HI and $AgNO_3$

Answer: D

36. The bad smelling substance formed by the action of alcoholic caustic potash on chloroform and aniline is

A. Chlorobenzen

B. Nitro benzene

C. Acetylene

D. Phenyl isocynide

Answer: D

37. What volume of methane is formed from 8.2 g of sodium acetate by fusion with soda lime?

    A. 2.24 litre

    B. 11.2 litre

    C. 5.6 litre

    D. 10 litre

Answer: A

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38. Anhydrous $CaCl_2$ is used as drying agent because it

    A. Adsorb and absorbs water molecules

    B. Absorbs water molecules

    C. Adsorb water molecules

    D. None

Answer: B

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39. An optically active compound has 3 different asymmetric carbon atoms. The number of possible isomers are

A. 8

B. 6

C. 4

D. 2

Answer: A

40. Na_2CO_3 cannot be used in place of $(NH_4)_2CO_3$ for the percipitation of V group because

A. Na will react with acid radicals

B. Conc. of CO_3^{2-} is very low

C. Mg will be percipitated

D. Na^+ interferes in the detection of V group

Answer: C

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41. Gold dissolves in aqua-regia forming

    A. Chloroauric acid

    B. Aurous chloride

    C. Aurous nitrate

    D. Auric chloride

Answer: A

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42. One of the constituents of German silver is

A. Cu

B. Al

C. Mg

D. Ag

Answer: A

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43. Which compound most readily forms hydrogen bonds between its molecules in the liquid state?

A. HBr

B. HF

C. HCl

D. HI

Answer: B

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44. Ozone reacts with moist iodine giving

A. I_2O_5

B. I_4O_9

C. IO_5

D. HIO_3

Answer: D

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45. Which liberates H_2 with HNO_3?

A. Zn

B. Al

C. Cu

D. Mg

Answer: D
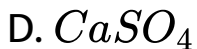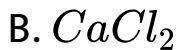
46. When CO is heated with NaOH under pressure we get

    A. Sodium oxalate

    B. Sodium acetate

    C. Sodium format

    D. Sodium benzoate

Answer: C

47. Temporary hardness is caused due to the presence of

A. $CaCO_3$

B. $CaCl_2$

C. $Ca(HCO_3)_2$

D. $CaSO_4$

Answer: C

48. When the same amount of zinc is treated separately with excess of H_2SO_4 and excess of NaOH, the ratio of volumes of H_2 evolved is

A. $1:2$

B. $1:1$

C. $9:4$

D. $2:1$

Answer: B

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49. Which is not an ore of nickel?

A. Pentlandite

B. Garnierite

C. Haematite

D. Nickel glance

Answer: C

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50. With respect to chlorine, hydrogen will be

A. Electronegative

B. Electropositive

C. Neutral

D. None of these

Answer: B

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51. The highest B.P. is expected for

A. Iso-octane

B. 2, 2, 3, 3-tetra methyl butane

C. n-octane

D. n-butane

Answer: C

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52. Carbon black, which is used in making printer's ink is obtained by the decomposition of

A. Acetylene

B. Carbon-tetrachloride

C. Benzene

D. Methane

Answer: D

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53. Solid CH_4 is

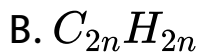A. Molecular solid

B. Covalent solid

C. Ionic solid

D. Non-existent

Answer: A

54. General formula for alkenes is

A. $C_n H_{2n}$

B. $C_{2n} H_{2n}$

C. $C_n H_{2n+2}$

D. $C_n H_{2n-2}$

Answer: A

55. The shape of ethylene molecule is

A. Tetrahedral

B. Trigonal planar

C. Pyramidal

D. Linear

Answer: B

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56. Ethylene is formed by the dehydration of

A. CH_3CHO

B. Propyl alcohol

C. C_2H_5OH

D. Ethyl acetate

Answer: C

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57. When acetamide reacts with Br_2 and caustic soda then we get

A. Acetic acid

B. Methyl amine

C. Bromoacetic acid

D. Ethane

Answer: B

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58. The reaction of HCOOH with conc. H_2SO_4 gives

A. CO_2

B. $H_2C_2O_4$

C. CO

D. CH_3COOH

Answer: C

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59. Which of the following classes of compounds may be isomers of alkanoic acids?
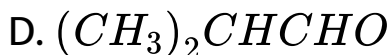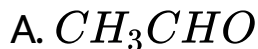
A. Alkanediols

B. Alkanoates

C. Hydroxy alkanals

D. All of the above

Answer: D

60. Which of the following organic compound undergoes Cannizzaro's reaction? : CH_3CHO

A. CH_3CHO

B. CH_3CH_2CHO

C. HCHO

D. $(CH_3)_2CHCHO$

Answer: C

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