CHEMISTRY
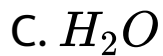
BOOKS - KCET PREVIOUS YEAR PAPERS

SOLVED PAPER 04

Chemistry

1. Which one of the following is not an amphoteric substance?

A. HNO_3

B. HCO_3^-

C. H_2O

D. NH_3

Answer: A

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2. When 50 cm^3 of 0.2 N H_2SO_4 is mixed with

50 cm^3 of IN KOH, the heat liberated is

A. 11.46 kJ

B. 57.3 kJ

C. 573 kJ

D. 573 J.

Answer: D

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3. An artificial radioactive isotope gave $^{14}_{7}N$ after two successive $B\eta$-particle emissions.

The number of neutrons in the parent nucleus must be

A. 9

B. 14

C. 5

D. 7

Answer: A

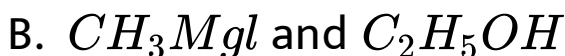▶ **Watch Video Solution**

4. Stainless steel does not rust because

A. chromium and nickel combine with iron

B. chromium forms an oxide layer and protects iron from rusting

C. nickel present in it, does not rust

D. iron forms a hard chemical compound with chromium present in it.

Answer: B

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5. Which of the following combinations can be used to synthesise ethanol?

A. CH_3MgI and CH_3COCH_3

B. CH_3MgI and C_2H_5OH

C. CH_3MgI and $CH_3COOC_2H_5$

D. CH_3MgI and $HCOOC_2H_5$

Answer: C

6. A solution contains 1.2046×10^{24} hydrochloric acid molecules in one dm^3 of the solution. The strength of the solution is

A. 6N

B. 2N

C. 4N

D. 8N

Answer: B

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7. Nuclear theory of the atom was put forward by

    A. Rutherford

    B. Aston

    C. Neils Bohr

    D. J.J. Thomson

Answer: A

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8. In acetylene molecule, the two carbon atoms are linked by

    A. one sigma bond and two pi bonds

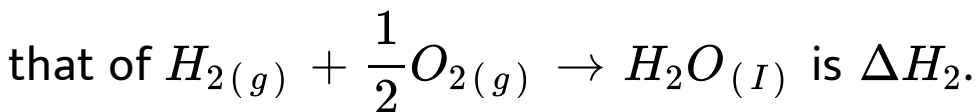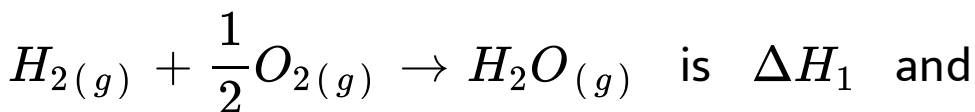   B. two sigma bands and one pi bond

    C. three sigma bonds

    D. three pi bonds.

Answer: A

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9. The enthalpy of the reaction,

$$H_{2(g)} + \frac{1}{2}O_{2(g)} \rightarrow H_2O_{(g)} \text{ is } \Delta H_1 \text{ and}$$

that of $H_{2(g)} + \frac{1}{2}O_{2(g)} \rightarrow H_2O_{(I)}$ is ΔH_2.

Then

A. $\Delta H_1 < \Delta H_2$

B. $\Delta H_1 + \Delta H_2 = 0$

C. $\Delta H_1 > \Delta H_2$

D. $\Delta H_1 = \Delta H_2$

Answer: A

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10. A radioactive isotope decays at such a rate that after 192 minutes only 1/16 of the original amount remains. The half-life of the radioactive isotope is

A. 32 min

B. 48 min

C. 12 min

D. 24 min

Answer: B

11. The pressure and temperature of $4dm^3$ of carbon dioxide gas are doubled. Then the volume of carbon dioxide gas would be

A. $2dm^3$

B. $3dm^3$

C. $4dm^3$

D. $8dm^3$

Answer: C

12. 4 g of copper was dissolved in concentrated nitric acid. The copper nitrate on strong heating gave 5 g of its oxide. The equivalent weight of copper is

A. 23

B. 32

C. 12

D. 20

Answer: B

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13. In the manufacture of ammonia by Haber's process, $N_{2(g)} + 3H_2 \leftrightarrow 2NH_{3(g)} + 92.3kJ$, which of the following conditions is unfavourable

A. increasing the temperature

B. increasing the pressure

C. reducing the temperature

D. removing ammonia as it is formed

Answer: A

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14. The chemical equilibrium of a reversible reaction is not influenced by

A. pressure

B. catalyst

C. concentration of the reactants

D. temperature

Answer: B

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15. Cumene process is the most important commercial method for the manufacture of phenol. Cumene is

A. 1-methyl ethyl benzene

B. ethyl benzene

C. vinyl benzene

D. propyl benzene.

Answer: A

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16. Which of the following reagents does not give acid chloride on treating with an acid ?

A. PCI_5

B. CI_2

C. $SOCI_2$

D. PCI_3

Answer: B

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17. Among the halogens, the one which is oxidised by nitric acid is

A. fluorine

B. iodine

C. chlorine

D. bromine.

Answer: B

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18. The metal which does not form ammonium

nitrate by reaction with dilute nitric acid is

A. Al

B. Fe

C. Pb

D. Mg

Answer: B

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19. The elements with atomic numbers 9, 17, 35, 53, 85 are all

A. noble gases

B. halogens

C. heavy metals

D. light metals.

Answer: B

20. In the electrolytic method of obtaining aluminium from purified bauxite, cryolite is added to the charge in order to

A. minimise the heat loss due to radiation

B. protect aluminium produced from oxygen

C. dissolve bauxite and render it conductor of electricity

D. lower the melting point of bauxite.

Answer: D

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21. The number of 2 p electrons having spin quantum number S = $-1/2$ are

A. 6

B. 0

C. 2

D. 3

Answer: D

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22. Pick out the alkane which differs from the other members of the group.

A. 2,2-dimethyl propane

B. pentane

C. 2-methyl butane

D. 2,2-dimethyl butane.

Answer: B

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23. 56 g of nitrogen and 8 g of hydrogen gas are heated in a closed vessel. At equilibrium 34 gof ammonia are present. The equilibrium number of moles of nitrogen, hydrogen and ammonia are respectively

A. 1, 2,2

B. 2,2,1

C. 1, 1, 2

D. 2, 1, 2

Answer: C

24. A process is taking place at constant temperature and pressure. Then

A. $\Delta H = \Delta E$

B. $\Delta H = T\Delta S$

C. $\Delta H = 0$

D. $\Delta S = 0$

Answer: B

25. In a galvanic cell, the electrons flow from

A. anode to cathode through the solution

B. cathode to anode through the solution

C. anode to cathode through the external circuit

D. cathode to anode through the external circuit.

Answer: C

26. The reaction,

$2SO_{2(g)} + O_{2(g)} \leftrightarrow SO_{3(g)}$ is carried out in a 1 dm^3 vessel and 2 dm^3 vessel separately.

The ratio of the reaction velocities will be

A. $1:8$

B. $1:4$

C. $4:1$

D. $8:1$

Answer: D

27. In a buffer solution of weak acid and its salt, when the concentration of salt to acid is increased by 10 times, the pH of the solution,

    A. increases by one

    B. decreases by one

    C. decreases ten fold

    D. increases ten fold.

Answer: A

28. When methane mixed with oxygen is passed through heated molybdenum oxide, the main product formed is :

A. methanoic acid

B. ethanal

C. methanol

D. methanal.

Answer: D

29. Benzene can be obtained by heating either

benzoic acid with Xor phenol with Y. X and

Yare respectively

   A. zinc dust and soda lime

   B. soda lime and zinc dust

   C. zinc dust and sodium hydroxide

   D. soda lime and copper.

Answer: B

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30. An organic compound is boiled with alcoholic potash. The product is cooled and acidified with HCI. A white solid separates out. The starting compound may be

    A. ethyl benzoate

    B. ethyl formate

    C. ethyl acetate

D. methyl acetate,

Answer: A

31. A nitrogen containing organic compound gave an oily liquid on heating with bromine and potassium hydroxide solution. On shaking the product with acetic anhydride, an antipyretic drug was obtained. The reactions indicate that the starting compound is

A. aniline

B. benzamide

C. acctamide

D. nitrobenzene.

Answer: B

32. The silver salt of a fatty acid on refluxing with an alkyl halide gives :

A. acid

B. ester

C. ether

D. amine

Answer: B

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33. Pick out the one which does not belong to the family

A. pepsin

B. cellulose

C. ptyalin

D. lipase.

Answer: B

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34. Which one of the following is wrongly matched?

A. saponification is- second order reaction of $CH_3COOC_2H_5$

B. hydrolysis is-pseudo unimolecular of $CH_3CHOOCH_3$ reaction

C. decomposition - first order reaction of H_2O_2

D. combination of H_2 - zero order reaction and Br_2 to give HBr

Answer: D

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35. The diameter of colloidal particles range from

A. $10^{-6}m$ to $10^{-9}m$

B. $10^{-9}m$ to $10^{-7}m$

C. $10^3 m$ to $10^{-3}m$

D. $10^{-3}m$ to $10^{-6}m$

Answer: A

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36. On treating a mixture of two alkyl halides with sodium metal in dry ether, 2-methylpropane was obtained. The alkyl halides are

    A. 2-chloropropane and chloromethane

    B. 2-chloropropane and chloroethane

    C. chloromethane and chloroethane

    D. chloromethane and l-chloropropane

Answer: A

37. Which of the following statements about benzyl chloride is incorrect?

   A. it is less reactive than alkyl halides

   B. it can be oxidised to benzaldehyde by boiling with copper nitrate solution

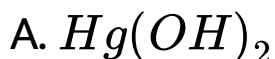   C. it is a lachrymatory liquid and answers Beilstein's test

D. it gives a white precipitate with alcoholic

silver nitrate.

Answer: A

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38. The main product obtained when a solution of sodium carbonate reacts with mercuric chloride is

A. $Hg(OH)_2$

B. $HgCO_3 . HgO$

C. $HgCO_3$

D. $HgCO_3 . Hg(OH)_2.$

Answer: B

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39. In the electrothermal process, the compound displaced by silica from calcium phosphate is

A. calcium phosphide

B. phosphine

C. phosphorus

D. phosphorus pentoxide

Answer: D

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40. The enthalpy of combustion of methane at $25°C$ is 890 kJ. The heat liberated when 3.2 g of methane is burnt in air is

A. 445kJ

B. 278kJ

C. $-890kJ$

D. 178kJ

Answer: D

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41. The velocity constant of a reaction at 290 K was found to be $3.2 \times 10^{-3}s^{-1}$. When the temperature is raised to 310 K, it will be about

A. 6.4×10^{-3}

B. 3.2×10^{-4}

C. 9.6×10^{-3}

D. 1.28×10^{-2}

Answer: D

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42. Select the pK_a value of the strongest acid

from the following

A. 1

B. 3

C. 2

D. 4.5

Answer: A

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43. Pick out the unsaturated fatty acid from the following:

A. stearic acid

B. lauric acid

C. oleic acid

D. palmitic acid.

Answer: C

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44. Nylon is not a

A. condensation polymer

B. polyamide

C. copolymer

D. homopolymer.

Answer: D

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45. The coal tar fraction which contains phenol

is

A. middle oil

B. green oil

C. heavy oil

D. light oil.

Answer: A

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46. The compounds A and B are mixed in equimolar proportion to form the products, $A + B \leftrightarrow C + D$ At equilibrium, one third of

A and B are consumed. The equilibrium

constant for the reaction is

A. 0.5

B. 4

C. 2.5

D. 0.25

Answer: D

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47. In froth floatation process for the purification of ores, the particles of ore float because

A. their surface is not easily wetted by water

B. they are light

C. they are insoluble

D. they hear electrostatic charge.

Answer: A

48. Which of the following statements about amorphous solids is incorrect?

A. they melt over a range of temperature

B. they are anisotropic

C. there is no orderly arrangement of particles

D. they are rigid and incompressible.

Answer: B

49. Hydrogen diffuses six times faster than the gas A. The molar mass of gas A is

A. 72

B. 6

C. 24

D. 36

Answer: A

50. Dulong and Petit's law is valid only for

    A. metals

    B. non-metals

    C. gaseous elements

    D. solid elements.

Answer: D

51. Identify the gas which is readily adsorbed by activated charcoal:

A. N_2

B. SO_2

C. H_2

D. O_2

Answer: B

52. If the distance between Nat and C ions in sodium chloride crystal is Xpm, the length of the edge of the unit cell is

A. 4 X pm

B. X74 pm

C. $X/2$ pm

D. 2Xpm

Answer: D

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53. Which of the following statements is incorrect?

A. In $K_3[Fe(CN)_6]$, the ligand has satisfied only the secondary valency of ferreion

B. In $K[Fe(CN)_6]$, the ligand has satisfied both primary and secondary valencies of ferric ion.

C. In $K[Fe(CN)_6]$, the ligand has satisfied both primary and secondary

valencies of ferrous ion

D.   In $[Cu(NH_3)]SO_4$ the ligand has

satisfied only the secondary valency of

copper.

Answer: A

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54. 2-Acetoxy benzoic acid is used as an

A. antimalarial

B. antidepressant

C. antiseptic

D. antipyretic.

Answer: D

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55. A nucleoside on hydrolysis gives

A.   a   heterocyclic   base   and

  orthophosphoric acid

B. an aldopentose, a heterocyclic base and

orthophosphoric acid

C. an aldopentose and a heterocyclic base

D. an aldopentose and orthophosphoric

acid

Answer: C

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56. In qualitative analysis, in order to detect second group basic radical, HS gas is passed in the presence of dilute HCl to

A. increase the dissociation of H_2S

B. decrease the dissociation of salt solution

C. decrease the dissociation of H_2S

D. increase the dissociation of salt solution

Answer: C

57. Aluminium displaces hydrogen from dilute HCI whereas silver does not Thee.m.f. of a cell prepared by combining Al/Al ^3+ and Ag/Ag ^+ is 2.46 V. The reduction potential of silver electrode is + 0.80 V. The reduction potential of aluminium electrode

A. $+1.66V$

B. $-3.26V$

C. $3.26V$

D. $-1.66V$

Answer: D

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58. The first fraction obtained during the fractionation of petroleum is

    A. hydrocarbon gases

    B. kerosene oil

    C. gasoline

D. diesel oil.

Answer: C

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59. Which of the following compounds gives trichloromethane on distilling with bleaching powder?

A. A) methanal

B. B) phenol

C. C) ethanol

D. D) methanol

Answer: D

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60. Benzoin is

A. compound containing an aldehyde and

a ketonic group

B. α, β-unsaturated acid

C. a-hydroxy aldehyde

D. a-hydroxy ketone.

Answer: B

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