Chemistry
1983- 2004

JAMB

Questions

Chemistry 1983

1. X is crystalline salt of sodium. Solution of X in water turns litmus red produces a gas which turns lime water milky when added to sodium carbonate. With barium chloride solution, X gives a white precipitate which is insoluble in dilute hydrochloric acid. X is

A. Na_2CO_3 B. $NaHCO_3$
C. $NaHSO_4$ D. Na_2SO_3
E. Na_2SO_4

2. The alkanol obtained from the production of soap is sweet taste and melts on heating. In the presence of

A. ethanol B. glycerol
C. methanol D. propanol
E. glycol

3 The flame used by welders in cotton metals is

A. butane gas flame
B. acetylene flame
C. kerosene flame
D. oxy-acetylene flame
E. oxygen flame

4 Consecutive members of an alkane homologous series differ by

A. CH B. CH_2
C. CH_3 D. C_nH_n
E. CnH_{2n+2}

5. If an element has the lectronic configuration $1s^2 2s^2 2p_6 3s_2 3p_2$, it is

A. a metal
B. an alkaline earth metal
C. an s-block element
D. a p-block element
E. a transition element

6 Some copper (11) sulphate pentahydrate ($CuSO_45H_2O$), was heated at 120oC with the following results: Wt of crucible = 10.00 g; Wt of crucible + $CuSO_45H_2O$= 14.98g; Wt of crucible + residue = 13.54g. How many molecules of water of crystallization were lost? [H=1, Cu =63.5, O=16, S= 32]

A. 1 B. 2
C. 3 D. 4
E. 5

7. The three-dimensional shape of methane is

A. hexagonal B. tigonal
C. linear D. tertrahedral
E. cubical

yeast and in the absence of air X is converted to compound Y in the absence of air, X is converted to compound Y and colourless gas.

Compound Y reacts with sodium metal to produce a gas Z which gives a 'pop' sound with a glowing splint. Y also reacts with ethanoic acid to give a sweet smelling compound W.

8 Compound W is

A. a soap B. an oil
C. an alkane D. an ester
E. sucrose

9. The molecular formula of X is

A. $C_{12}H_{22}O_{11}$ B. $C_6H_{12}O_6$
C. $C_3H_6O_3$ D. $C_2H_4O_2$
E. $C_4H_3O_4$

Question 8-10 are based on the following

An unknown organic compound X has a relative molecular mass of 180. It is a colourless crystalline solid, readily soluble in water. X contains the element C, H, and O in the atomic ratio 1:2:1. The compound has a

13.

10. reaction of X with yeast forms the basic of the
A. plastic industry
B. textile industry
C. brewing industry
D. soap industry
E. dyeing industry.

11. A mixture of common salt, ammonium chloride and barium sulphate can best be separated by
A. addition of water followed by filtration then sublimation
B. addition of water followed by sublimation then filtration
C. sublimation followed by addition of water then filtration
D. fractional distillation
E. fractional crystallization.

12. Which of the following relationships between the pressure P, the volume V and the temperature T, represents and ideal gas behaviors?
A. P&VT B. P & T/V
C. PT&V D. PV & VT
E. P & V/T

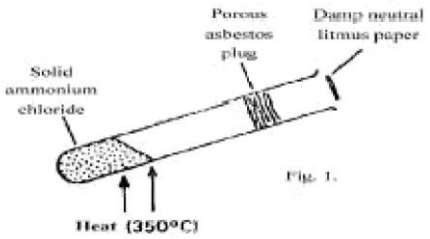

Fig. 1.

In the above experiment (fig1) the litmus paper will initially
A. be bleached B. turn green
C. turn red D. turn blue
E. turn black

14. The colour imparted to a flame by calcium ion is
A. green B. blue
C. brick-red D. yellow
E. lilac

15. In the reaction M + N ⇌ P, H = + Q kJ. Which of the following would increase the concentration of the product?
A. Decreasing the concentration of N
B. Increasing the concentration of P
C. Adding a suitable catalyst.
D. Decreasing the temperature

16. In which of the following processes is iron being oxidized?
1. $Fe + H_2SO_4 \rightarrow FeSO_4$
2. $FeSO_4 + H_2S \rightarrow FeS + H_2SO_4$
3 $FeCl + Cl_2 \rightarrow FeCl_3$
4 $FeCl_3 + SnCl_2 \rightarrow 2FeCl_2 + SnCl_4$

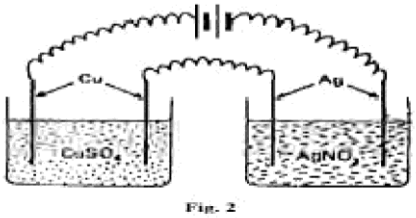

Fig. 2

A. 1 only B. 2 only
C. 3 only D. 1 and 3
E. 2 and 4.

17.

A. 0.54 g
C. 1.62 g
E. 3.24 g

Fig.2

In the above experiment (fig.2), a current was passed for 10 minutes and 0.63 g of copper was found to be deposited on the cathode of $CuSO_4$ cells. The weight of $AgNO_3$ cell during the same period would be [Cu = 63, Ag 108]

B. 1.08 g
D. 2.16 g

18. In the reaction $Fe + Cu^{2+} \rightarrow Fe^{2+} + Cu$, iron displaces copper ions to form copper. This is due to the fact that
A. iron is in the metallic form while dthe copper is in the ionic form
B. the atomic weight of copper is greater than that of ion
C. copper metal has more electrons than ion metal
D. iron is an inert metal
E. iron is higher in the electrochemical series than copper.

20. How many isomeric forms are there for the molecular formula $C_3H_6Br_2$?
A. 1 B. 2
C. 3 D. 4
E. 5

21. A piece of burning sulphur will continue to burn in a gas jar of oxygen to give misty fumes which readily dissolve in water. The resulting liquid is
A. sulphur (1V) trioxide
B. Tetraoxosulphate acid (V1)
C. Trioxosulphate (1V) acid
D. Dioxosulphate (11) acid
E. Hydrogen sulphide

19 $C_2H_5C=CH_2$

CH_3

The correct name of the compound with the above structural formula is
A. 2-methylbut-1-ene
B. 2-methylbut-2-ene
C. 2-methylbut-1-ene
D. 2-ethyprop-1-ene
E. 2-ethylprop-2-ene 22. Sodium decahydrate ($Na_2SO_4\ 10H_2O$) an exposure to air loses all its water of crystallization. The process of loss is known as
A. Efflorescence B Hygroscopy
C Deliquescence D. Effervescence
E Dehydration

23 Which of the following happens during the electrolysis of molten sodium chloride?
A. Sodium ion loses an electron
B. Chlorine atom gains an electron
C. Chloride ion gains an electron
D. Sodium ion is oxidized
E. Chloride ion is oxidized.

24 Crude petroleum pollutant usually seen on some Nigeria creeks and waterways can be dispersed or removed by.
A. heating the affected parts order to boil off the petroleum
B. mechanically stirring to dissolve the petroleum in water
C. pouring organic solvents to dissolve the petroleum
D. spraying the water with detergents
E. cooling to freeze out the petroleum.

25 An element is electronegative if
A. it has a tendency to exist in the gaseous form
B. its ions dissolve readily in water
C. it has a tendency to lose electrons
D. it has a tendency to gain electrons
E. it readily forms covalent bonds

26. Solution X,Y, and Z have pH values 3.0, 5.0 and 9.0 respectively. Which of the following statements is correct?

A. All the solution are acidic
B. All solution are basic
C. Y and Z are more acidic than water
D. Y is more acidic than X.
E. Z is the least acidic

27. In the reactions

(1) $H_2(g) + 1$

$2\ O_2(g)\ H_2O(1)$; H =-2.86kJ

(11) $C(s) + O_2(g)\ CO_2(g)$; H= -406 kJ

the equations imply that

A. more heat is absorbed heat is evolved in (1)
B. more heat is absorbed in (11)
C. less heat is evolved in (1)
D. reaction (11) proceeds faster than (1)
E. reaction (1) proceeds faster than (11)

28. Which of these metals, Mg, Fe, Pb, and Cu will dissolve in dilute HCI?
A. All the metals
B. Mgm Fe, and Cu
C. Mg, Fem and Pb
D. Mg and Fe only
E. Mg only

29. Stainless steel is an alloy of
A. Carbon, iron and lead
B. Carbon, ion and chromium
C. Carbon iron and copper
D. Carbon, iron and silver
E. Carbon and iron only

30. What volume of 0.50 MH_2SO_4 will exactly neutralize 20cm^3 of 0.1 M NaOH solution?
A. 2.0 cm^3 B. 5.0 cm^3
C. 6.8 cm^3 D. 8.3 cm^3
E. 10.4 cm^3

31. Which of the following pair of gases will NOT react further with oxygen at a temperature between 30°C and 400°C?
A. SO_2 and NH_3 B. CO_2 and H_2
C NO_2 and SO_3 D. SO_3 and NO
E. CO and H_2

32. Some metals are extracted from their ores after some preliminary treatments by electrolysis (L) some by thermal reaction(T) and some by a combination of both processes(TL). Which set-up in the following for the extraction of iron copper and aluminum is correct?
A. Iron (L), copper (L) m aluminum (T)
B. Iron (T), copper (L), aluminum (T)
C. Ion (TL), copper (TL), aluminium (TL)
D. Iron (L), copper (T), aluminium (T).
E. Ion (T), copper (L), aluminium (TL).

33. In the preparation of some pure crystals of Cu $(NO_3)_2$ starting with CuO, a student gave the following statements as steps he employed. Which of these shows a flaw in his report?
A. Some CuO was reacted with excess dilute H_2SO_4
B. The solution was concentrated
C. When the concentrate was cooled, crystals formed were removed by filtration.
D. The crystals were washed with very cold water
E. The crystals were then allowed to dry.

34. Which of the following seperation processes is most likely to yield high quality ethanol (>95%) from palm wine?
A. Fractional disllation without a dehydrant
B. Simple distillation without a dehydrant
C. Fractional distillation with a dehydrant
Column chromatography
D. Evaporation

35. Increasing the pressure of a gas
A. lowers the average kinetic energy of the molecules
B. decreases the density of the gas
C. decreases the temperature of the gas
D. increases the density of the gas
E. increases the volume of the gas.

36. 2.5 g of a hydrated barium salt gave on heating, 2.13 g of the anhydrous salt. Given that the relative molecular mass of the anhydrous salt is 208, the number of molecules of water of crystallization of the barium salt is
A. 10 B. 7
C. 5 D. 2
E. 1

37. 3.06 g of a sample of potassium trioxochlorate (v) ($KClO_3$) was required to make a saturated solution with 10cm3 of water at 25°C. The solubility of the salt at 25°C is [K =39, CI =35.5, O=16]
A. 5.0 moles dm^3 B. 3.0 moles dm^3
C. 2,5 moles dm^3 D. 1.0 moles dm^3
E. 0.5 moles dm_3

38. The cracking process is very important in the petroleum industry because it
A. gives purer products
B. Yields more lubricants
C. Yields more engine fuels
D. Yields more asphalt
E. Yield more candle wax

39. A gas that can behave as reducing agent towards chlorine and as an oxidizing agent toward hydrogen sulphide is
A. O_2 B NO
C SO_2 D NH_3
E CO_2

40. Which if the following solution will give a white precipitate with barium chloride solution and a green flame test?
A. $Na2SO_4$ B CuSO4
C $CaSO_4$ D $CaCI_2$
E. $(NH_4)_2 SO_4$

41. The mass of an atom is determined by
A. its ionization potential
B. its electrochemical potential
C. the number of protons
D. the number of neutrons and protons
E. the number of neutrons and electrons

42. Which of the following is neutralization reaction?
A. Addition of chloride solution

B. Addition of trioxonirate (V) acid (nitric acid) to distilled water.

C. Addition of trioxonirate (V) acid (nitric acid) to tetraoxosulphate (V1) acid (sulphuric acid).

D. Addition of trioxonirate (V) (potassium nitrate) solution

E. Addition of trioxonirate (V) acid (nitric acid) potassium hydroxide solution.

43. A jet plane carrying 3,000 kg of ethane burns off all the gas forming water and carbondioxide. If all the carbondioxide is expelled and the water formed is condensed and kept on board the plane, then the gain in weight is

A. 1,800 kg B. 900 kg
C. 600 kg D. 2,400 kg
E. 1,200 kg

44. Liquid X, reacts with sodium trioxocarbonate (IV) (Na_2CO_3) to give a gas which turns calcium chloride solution milky. X is

A. Na_2SO4 (aq) B KI (ag)
C An alkali D An acid
E A hydrocarbon.

45. Which of the following statements is FALSE?

A. copper (11) ion can be reduced to copper (1) ion by hydrochloric acid and zinc.
B. Sodium metal dissolves in water giving oxygen
C. Nitrogen is insoluble in water
D. Carbondioxide is soluble in water
E. Lead has a higher atomic weight than copper

46. When sodium dioxonitrate (111) ($HaNO_2$ \) dissolves is

A. Exothermic B. Endothermic
C. Isothermic D. Isomeric
E Hydroscopic

47. The equilibrium reaction between copper (1) chloride and chloride at 25°C and 1 atmosphere is represented by the equation:
$2CuCl_2 + Cl_2 \rightleftharpoons 2CuCl_2$ H = -166kJ . Which of the following statement is TRUE for the reaction, pressure remaining constant.

A More $CuCl_2$ is formed at 40°C
B. More $CuCl_2$ is formed at 10°C
C. Less $CuCl^2$ is formed at 10°C
D there is no change $CuCl_2$ formed at 40°C and 10°C
E More $CuCl_2$ is consumed at 40°C

48. $Zn + H^2SO_4 \rightarrow ZnCl_2 + H_2$

The rate of the above reaction will be greatly increased if.

A. the zinc is in the powered form
B. a greater volume of the acid is used
C. a smaller volume of the acid is used
D. the reaction vessel is immersed in an ice-bath
E. the zinc is in the form of pellets.

49. $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_4$

In the above reaction how much zinc will be left undissolve if 2.00 g of zinc treated with $10cm_3$ of 1.0 M of H_2SO_4? [Zn =65, S=32, O = 16, H = 1]

A. 1.35g B. 1.00 g
C. 0.70g D. 0.65 g
E. 0.06 g

50. 30cm3 of 0.1 M AI(NO3)3 solution is reacted with 100cm3 of 0.15M of NaOH solution. Which is in excess and by how much?

A. NaOH solution, by 70cm3
B. NaOH solution, by 60cm3
C. NaOH solution by 40cm3
D. AI $(NO^3)^3$, solution by 20cm3
E. AI $(NO^3)^3$ solution, by $10cm^3$

Chemistry 1984

1. Sodium chloride may be obtained from brine by

A. titration B. decantation
C. distillation D. evaporation
E. sublimation

2. $20cm^3$ of hydrogen gas are sparked with $20cm^3$ of oxygen gas in an eudiometer at 373K (100°C) and 1 at atmosphere. The resulting mixture is cooled to 298 K (25°C) and passed over calcium chloride. The volume of the residual gas is

A. $40cm^3$ B. $20cm^3$
C. $30cm^3$ D. $10cm^3$
E. $5 cm_3$ 3. For the reaction $NH_4NO_2 \rightarrow N_2 + 2H_2O$ calculate the volume of nitrogen that would be produced at S.T.P from 3.20 g of the trioxonirate (111) salt.

A. $2.24 dm^3$ B. $2.24 cm^3$

C. 1.12 cm^3 D. 1.12 dm^3
E. 4.48dm^3

(Relative atomic masses: N = 14m O =16, H=1).

4 Manganese (1V) oxide reacts with concentrated hydrochloric acid according to the equation
MnO_2 + xHCI ___ $MnCI_2$ + CI +yH_2O. x and y are
A. 2 and 5 respectively
B. 2 and 4 respectively

C. and 2 respectively
D. 4 and s2 respectively
E. 4 and 1 respectively

5 A molar solution of caustic soda is prepared by dissolving
A. 40 g NaOH in 100 g of water
B. 40 g NaOH in 1000 g of water
C. 20 g NaOH in 500 g of solution
D. 20 g NaOH in 1000 g of solution
E. 20 g NaOH in 80 g of solution.

6 Which among the element 1. Carbon 2. Oxygen 3. Copper 4. Bromine 5. Zinc will NOT react with either water of stream?
A. 1 and 2 B. 2 and 3
C. 3 and 4 D. 1, 2, and 3
E. 2, 3 and 5

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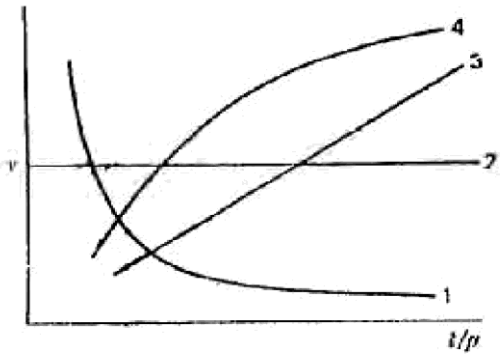


Fig 1

Fig 1
Which of the curves shown in fig 1 represents the relationships between the volume (v) and pressure (p) of an ideal gas at constant temperature?
A. 1 B. 2
C. 3 D. 4
E. 1 and 3

8 Naphthalene when heated melts at 354K (81°C) . At this temperature the molecules of naphthalene .
A. decompose into smaller molecules
B. change their shape
C. are oxidized by atmospheric oxygen
D. contract
E. become mobile as the inter molecular forces are broken.

9 The ration of the number of molecules in 2g of hydrogen to that in 16 g of oxygen is
A. 21 B. 1:1
C. 12 D. 1:4
E. 1:8

10 Which combination of the following statements is correct?
1. lowering the activation energy
2 conducting the reaction in a gaseous state
3. increasing the temperature
4. removing the products as soon as they are formed
5. powdering the reactant if solid
A. 1,2 and 3 → B. 1, 3 and 5
C. 2, 3 and 5 → D. 3 and 4
E. 3 and 5

11 The balance equation for the reaction of tetraoxosulphate (V1) acid with aluminium hydroxide to give water and aluminium tetraoxosulphate (V1) is
A. $H_2SO_4 + AlSO_4\ 2H_2O + AlSO_4$
B. $HSO_4 + AlOH\ H_2O + AlSO4$
C. $3H2SO_4 + 2AlH_3\ 6H2OH + Al(SO_4)_3$
D. $3H2SO4 + 2Al(OH)3\ 6H2O + Al(SO_4)_3$
E. $H_2SO_4 + Al(OH)_3\ H_2O + Al_2(SO4)_3$

12.

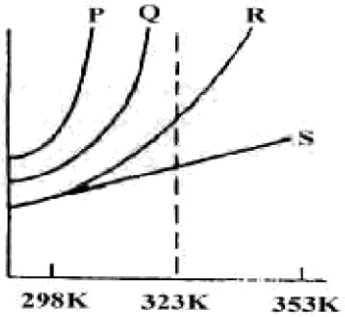


Fig.2.

Fig. 2.
The solubility curves of four substances are shown in Fig.2. Which of the four substances would crystallize from a saturated solution cooled from 353 K (80°C) to 323 K (50°C)
A. P and Q B. P and R
C. P and S D. Q and S
E. Q and R.

13. which of the following mixtures would result in a solution of pH greater than 7?
A. 25.00 cm^3 of 0.05 M H_2SO_4 and 50.00 cm^3 of 0.50 m Na_2CO_3
B. 25.00 cm^3 of 0.50 M H_2SO_4 and 25.00 cm^3 of 0.10 M $NaHCO_3$
C. 25.00 cm^3 of 0.11 M H_2SO_4 and 25;00 cm^3 of 0.10 M NaOH
D. 25.00 cm^3 of 0.11 M H_2SO_4 and 25.00 cm^3 of 0.50 M NaOH
E. 25.00 cm^3 of 0.25 M H_2SO_4 and 50.00 cm^3 of) .20 M NaOH

14. In which of the following reactions does hydrogen peroxide acts as a reducing agent?
A. $H_2S + H_2O$ $S + 2H_2O$
B. $PbSO_3 + H_2O_2$ $PbSO_4 + H_2O$
C. $2I^- + 2H + H_2O\ I_2 + 2H_2O$
D. $PbO_2 + 2HNO_3 + H_2O_2$ $Pb(NO_3)_2 + 2H_2O + O_2$

E. $SO + H_2O_2 \rightarrow H_2SO_4$

15. For the reaction $2Fe + 2 \xrightarrow{e^-} 2Fe^{2+} + I_2$, which of the following statements is TRUE?

A. Fe is oxidized to Fe_3

B. Fe^{3+} is oxidized to Fe^{2+}

C. I^- is oxidized to I_2
D. I- is reduced to I_2
E. I^- is displacing an electron from Fe^{3+}

16.

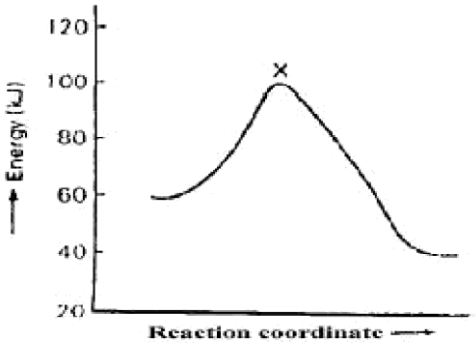


Fig. 3

The diagram above (Fig.3) shows the energy profile for the reaction A+B = C+ D. form this diagram, its clear that the reaction is

A. spontaneous B. isothermal
C. adiabatic D. exothermic
E. endothermic $\longrightarrow$

17. In dilute solute the heat of the following NaOH + HCI = NaCI + H_2O + H_2SO_4 Na_2SO_4 + $2H_2O$ is

A. +28.65 kJ B. –28.65kJ
C. +57.3 kJ D. –114.6 kJ
E. –229.2 kJ

18. For the reactions: (1 Melon oil + NaOH ! Soap + Glycerol (11) 3Fe + 4H2O Fe_3O_4 + $4H_2$ (111) N_2O_4 $2NO_2$. Which of the following statements is true?

A. Each of the three reactions requires a catalyst
B. All the reactions demonstrate Le Chatelier's principle
C. The presence of a catalyst will increase the yield of products
D. Increase in pressure will result in higher yields of the products in 1 and 11 only
E. Increase in pressure will result in higher of the products in 111 only.

19. Which of the following methods may be used to prepare trioxonirate (V) acid (nitric acid) in the laboratory?

A. Heating ammonia gas with tetraoxosulphate (1V) acid
B. Heating ammonium trioxosulphate (V) with tetraoxonitrate (V) acid
C. Heating sodium trioxonirate (v) with tetraoxosulphate (V1) acid
D. Heating potassium trioxonirate (V) with calcium hydroxide.
E. Heating a mixture of ammonia gas and oxygen\

20. Lime –water, which is used in the laboratory for the detection of carbon (1V) oxide, is an aqueous solution of:

A. $Ca(OH)_2$ B. $CaCO_3$
C. $CaHCO_3$ D. $CaSO_4$

21. An element that can exist in two or more different EN_2CO_3 structure forms which possess the desame chemical properties is said to exhibit

A. polymerism B. isotropy
C. isomorphism D. isomerism
E. allotropy.

22. Sulphur....

A. Forms two alkaline oxides
B. Is spontaneously flammable
C. Burns with a blue flame
D. Conducts electricity in the molten state
E. Is usually stored in the form of sticks in water.

23. Which off the following statements is NOT true of carbon monoxide?

A. CO is poisonous
B. CO is readily oxidized at room temperature by air to form Co_2
C. CO may be prepared by reducing CO_2, mixed coke heated to about 1000°C
D. CO may be prepared by heating charcoal with a limited amount of O_2
E. CO is a good reducing agent.

24. From the reactions:

ZnO + Na_2O Na_2ZnO and
ZnO+ CO2 $ZnCO^3$ it may be concluded that zinc oxide is

A. neutral B. basic
C. acidic D. amphoteric
E. a mixture

25. An example of a neutral oxide is

A. AL_2O_3 B. NO_2
C. CO_2 D. CO
E. SO_2

26. $3CI_2$+ $2NH_3$ $\longrightarrow$ N_2 + 6HCI. In the above reaction, ammonia acts as .

A. a reducing agent
B. an oxidizing agent
C. an acid
D. a catalyst
E. a drying agent

27. In the Haber process for the manufacturer of ammonia, finely divided iron is used as

A. an ionizing agent
B. a reducing agent
C. a catalyst
D. a dehydrating agent
E. an oxidizing agent.

28. An organic compound with a vapour density 56.5 has the following percentage composition: C = 53.1%, N = 12.4%, O = 28.3%, H = 6.2%. The molecular formula of the compound is

A. $C_3H_6O_2N$ B. $C_5H_6O_2N$

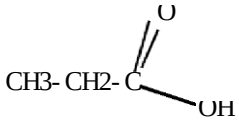
C. $(C_5H_7O_2N)_{1/2}$ D. $C_5H_7O_2N$

E. $(C_5H_7ON)_2$.

Relative atomic masses: N = 12.4%, O = 28.3%, H = 1)

29. The hybridization of the carbon atom in ethyne is
A. Sp^ B. sp^3
C. sp^2 D. sp
E. s

30. When the kerosene fraction form petrol is heated at high temperature, a lower boiling liquid is obtained. This process is known as

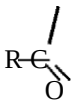
31. 

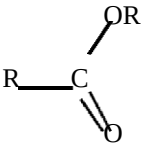
Is
A. acetic acid B. propanal
C. propanol D. ethanoic acid
E. propanoic acid

32 Alkaline hydrolysis of naturally occurring fats and oils

A. polymerization B. refining
C. hydrogenation D. cracking
E. fractional distillation

yields.
A. fats and acids
B. soaps and glycerol
C. m
argarine D. esters

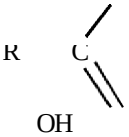
A. 

B 

and butter

E. detergents.

33 Which of the following represents a carboxylic acid?

E. 

C. H_2SO_4,
D. R - COOCOR

H
O

34 which of the statement is INCORRECT?

A. fractional distillation of crude petroleum will give following hydrocarbon fuels in order of increasing boiling point: Butane < petrol < kerosene
B. $H_2C = CH_2$ will serve as a monomer in the preparation of polythene
C. Both but – 1- ene and but –1-1yne will decolorize bromine readily.
D. But –2 – ene will react with chlorine to form 2, 3 – dichlorobutane.
E. Calcium carbide will react with water to form any alkayne

38. $_{1}{}^{3}R_{9}{}^{19}U_{12}{}^{24}S_{10}{}^{20}T_{7}{}^{19}$. Which of the following

35. which of the following statement is NOT correct about all four of the acids: HBr, HNO_3 H_2CO_3 and H_2SO_4? They
A. dissolve marble to liberate litmus red
B. have a pH less than 7
C. turn blue litmus red
D. neutralize alkalis to form salt
E. react with magnesium to liberate hydrogen.

36. If the cost of electricity required to deposit 1 g old magnesium is N5.00. How much salt would it cost to deposit 10 g of aluminium?
A. N10.00 B N27.00
C N44.44 D N66.67
E N33.33.
(Relative atomic masses: AI = 27, Mg = 24).

37, In an experiment, copper tetraoxosulphate (V1) solution was electolysed using copper electrodes, The mass of copper deposited at the cathode by the passage of 16000 coulombs of electricity is
A. 16.70 g B. 17. 60g
C. 67.10 g D. 10. 67 g
E. 60.17 g
(Relatively atomic masses: Cu = 63.5m O = 16, H = 1, S = 32).

statements is NOT true of the elements R, U, S, T, Y?
A. R is an isotope of hydrogen
B. U and Y are isotopes
C. R,U,S and T are metals
D. T is a noble gas
E. S will react with oxygen to form SO

39 Nitrogen can best be obtained from a mixture of oxygen and nitrogen by passing the mixture over
A. potassium hydroxide
B. heated gold
C. heated magnesium
D. heated phosphorus
E. calcium chloride.

40 Water is said to be 'hard' if it
A. easily forms ice
B. has to be warmed before sodium chloride dissolves in it
C. forms an insoluble scum with soar
D. contains nitrates
E. contains sodium ions.

41. Sodium hydroxide (NaOH) pellets are
A. deliquescent B. hygroscopic
C. efflorescent D. hydrated
E. fluorescent.

42 Which of the following structure formulae is NOT numeric with others?

A.
```
H H H H
|   |   | |
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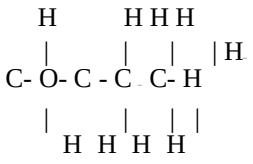
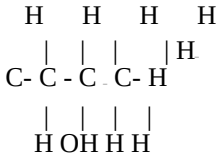
```
H–C- C - C – OH
|   |   |   |
H H H H
```

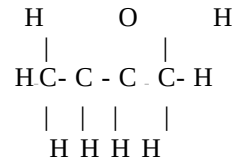
B.



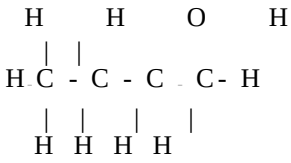
C.



D.



E.



43. Alkalines
- A. are all gases
- B. have the general formula $_{CnH2n} + _2O$
- C. contains only carbon and hydrogen
- D. are usually soluble in water
- E. are usually active compounds.

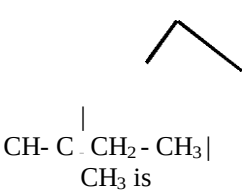
44. If an excess of a liquid hydrocarbon is poured into a jar of chlorine, and the sealed jar is then exposed for several hours to bright sunlight, all the chlorine gas is consumed. The hydrocarbon is said to have undergone
- A. a polymerization reaction
- B. an isomerixation reaction
- A. an addition reaction
- B. a substitution reaction
- C. a reduction reaction

45. The function of conc. H_2SOH_4 in the etherification of ethanoic acid with ethanol is to
- A. serves as a dehydrating agent
- B. serves as solvent

46. A piece of sea shell, when dropped into a dilute solution of hydrochloric acid produces a colourless odorless gas, which turns clear limewater milky. The shell contains
- A. sodium chloride
- B. ammonium nitrate
- C. calcium carbonate
- D. calcium chloride
- E. magnesium chloride

48. An aqueous solution of a metal salt, Mm gives a white precipate with NaOH, which dissolves in excess NaOH. With aqueous ammonium the solution of M also gives a white precipate which dissolves in excess ammonia. Therefore the caution in M is
- A. Zn^{++}
- B. Ca^{++}
- C. AI^{+++}
- D. Pb^{++}
- E. Cu^{++}

49. The



CH_3 is
- A. isopropylethene
- B. acetylene
- C. 3-methylbutane
- D. 2-methybutane
- E. 5-methypentane.

50. At S.T.P how many litres of hydrogen can be obtained from the reaction of $500cm^3$ of 0.5 M H_2SO_4 excess zinc metal.
- A. $22.4\ dm_3$
- B. $11.2\ dm_3$
- C. $6.5\ dm_3$
- D. $5.6\ dm_3$
- E. $0.00\ dm_3$ (Gram molecular volume of H2 = 22.4 dm_3)

C. act as a catalyst
D. prevent any side reaction
E. serve as an oxidizing reaction

Chemistry 1985

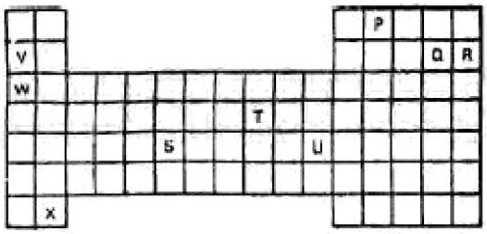


Fig. 1

1 Figure shows part of the periodic Table. Which of the elements belongs to the p-block?

A. S, T and U.
B. V, W and X
C. S and T only
D. P, Q and R
E. V, W, X and S.

2 Which of the following conducts electricity?

A. Sulphur B. Graphite
C Diamond D. Red phosphorus
E Yellow phosphorus.

3 An organic compound contains 72% carbon 12% hydrogen and 16% oxygen by mass. The empirical formula of the compound is

A. $C_6H_{22}O_3$ B. $C_6H_{10}O_3$
C $C_{12}H_{12}O$ D. $C_6H_{12}O$
E C_3CH_{10}

(H= 1, C = 12, O= 16).

4 0.499 of $CuSO_4.xH_2O$ when heated to constant weight gave a residue of 0.346 g. The value of x is

A. 05 B. 2.0
C. 30 D. 4.0
E. 5.0.

(Cu = 63.5, S = 32.0 O = 16, H = 1).

5. In an experiment which of the following observation would suggest that a solid sample is a mixture? The

A. solid can be ground to a fine powder
B. density of the solid 2.25 g dm-3
C. solid begins to melt until 648 K
D. solid absorbs moisture from the atmosphere and turns into a liquid
E. solid melts at 300 K.

6 Hydrogen diffuses through a porous plug

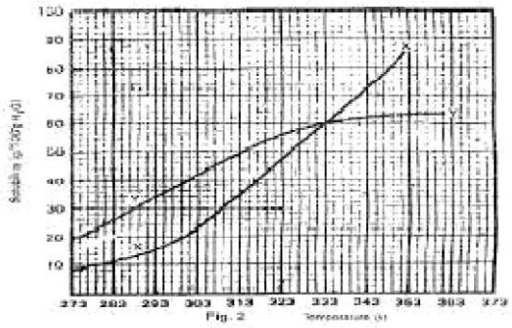
A. at the same rate as oxygen
B. at a slower rare than oxygen
C. twice as fast as oxygen
D. three times as fast as oxygen
E. four times as fast as oxygen.

1. Given the molecular mss of iron is 56 and that of oxygen is 16, how many moles of Iron (111) oxide will be contained in 1 kg of the compound?

A. 25.0 moles B. 12.5 moles
C. 6.25 moles D. 3.125 moles
E. 0.625 moles

8. 3.0 g of a mixture of potassium carbonate and potassium chloride were dissolved in a 250cm^3 standard flask. 25 cm^3 of this solution required 40.00cm^3 of 0.1 M HCI for neutralization. What is the percentage by weight of K_2CO_3 in the mixture?
A. 60 82 B. 72
C. 92 (K = D. 89
E. 39, O = 16, C = 12).

Figure 2 below represents the solubility curb\ves of two salts, X and Y, in water. Use this diagram to answer question9 to 11



9 At room temperature (300K)
A. Y is twice as soluble as X
B. X is twice as soluble as Y
C. X and Y soluble to the same extent
D. X is three times as soluble as Y
E. Y is three times as soluble as X

10. If 80 g each of X and Y are taken up in 100g of water at 353 K we shall have.
A. only 10 g of X and Y undissolve
B. only 16 g of Y undissolve
C. 10 g of X and 16 g of Y undissolved
D. all X and Y dissolved
E. all X and Y undissolved

11. If the molar mass of X is 36 g, the number of moles of X dissolved at 343 is
A. 0.2 moles B. 0.7 moles
C. 1.5 moles D. 2.0 moles
E. 3.0 moles

12. Some properties of chemical substances are mentioned below (i) solar taste (ii)slippery to touch (iii)yields alkaline gas with ammonium salts (iv) has pH less than 7 (v) turns phenolphthalein pink. Which of the above are NOT typical properties of alkaline?
A. (i), (iv) and (v)
B. (iv) and (v)