OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question.

QUESTION NO. 1 11th Class Chemistry Objective Paper Group 1 DG Khan Board 2024

1 For a reaction $NaOH + HCl \longrightarrow NaCl + H_2O$ the change in enthalpy is called :
(A) Heat of neutralization ● (B) Heat of reaction
(C) Heat of formation (D) Heat of combustion

2 An excess of silver nitrate is added to barium chloride solution and precipitates removed by filtration , what are the main ions in the filtrate ?
(A) Ba^{2+} and NO_3^- only (B) Ag^+ , Ba^{2+} and NO_3^- only ●
(C) Ag^+ and NO_3^- only (D) Ba^{2+}, NO_3^- and Cl^-

3 Which of the following solution has the highest boiling point ?
(A) 18 % solution of glucose (B) 6.0 % solution of urea
(C) 5.85 % solution of sodium chloride ● (D) All have the same boiling point

4 If a strip of Cu metal is placed in a solution of $FeSO_4$:
(A) Cu will be deposited (B) Fe is precipitated out ●
(C) Cu and Fe both dissolved (D) No reaction takes place

5 With increase of 10 °C temperature the rate of reaction doubles. This increase in rate of reaction is due to:
(A) Increase in number of effective collisions. (B) Increase in activation energy of reactants.
(C) Decrease in activation energy of reaction.
(D) Decrease in the number of collisions between reactant molecules.

6 One mole of SO_2 contains :
(A) 6.02×10^{23} atoms of oxygen (B) 6.02×10^{23} atoms of sulphur ●
(C) 18.1×10^{23} molecules of SO_2 (D) 4 gram atoms of SO_2

7 How many particles are called fundamental particles of an atom ?
(A) 3 ● (B) 5 (C) 100 (D) 6

8 What are the units of R_f value ?
(A) Cm (B) Cm^3 (C) dm^3 (D) No units ●

9 Which of the following cannot sublime ?
(A) Naphthalene (B) Iodine (C) Ammonium chloride (D) MnO_2 ●

10 If absolute temperature of a gas is doubled and the pressure is reduced to one half , the volume of the gas will
(A) Be doubled (B) Reduced 1/4 (C) Increases four times ● (D) Remain unchanged

11 Partial pressure of oxygen in lungs (in torr) is :
(A) 150 (B) 116 ● (C) 760 (D) 159

12 Molecules of CO_2 in dry ice form the :
(A) Molecular crystals ● (B) Ionic crystals (C) Covalent crystals (D) Any type of crystals

13 Vapour pressure is not affected by :
(A) Temperature (B) Intermolecular forces (C) Surface area ● (D) Pressure

14 Wave number of the light emitted by a certain source is $2 \times 10^6\ m^{-1}$. The wavelength of this light will be :
(A) 500 n.m ● (B) 500 m (C) 200 n.m (D) 5×10^7 m

15 Radioactive copper emits :
(A) α - rays (B) β - rays ● (C) γ - rays (D) Positive rays

16 Which of the following molecules have zero dipole moment ?
(A) NH_3 (B) $CHCl_3$ (C) BF_3 ● (D) H_2O

17 The bond order of helium molecule is :
(A) 3 (B) 2 (C) 1 (D) Zero ●

SECTION–I

QUESTION NO. 2 Write short answers to any Eight (8) of the following 16

i	N_2 and CO have the same number of electrons, protons and neutrons, justify.
ii	Law of conservation of mass have to be obeyed during stoichiometric calculations, explain.
iii	Why actual yield is always less than theoretical yield ?
iv	Write two suitable uses of the technique of chromatography
v	In solvent extraction technique, why repeated extractions using small portions of solvent are more efficient than using a single extraction but larger volume of solvent.
vi	How undesirable colours in crystallization process can be removed ?
vii	Write formulas to interconvert various scales of temperature.
viii	How density of an ideal gas can be calculated from ideal gas equation ?
ix	Derive Charle's law by kinetic equation of gases.
x	What is Handerson equation and for what purpose it is used ?
xi	What are applications of buffer solutions in daily life ?
xii	Derive ionic product of water and what is its value at $25^{o}C$.

QUESTION NO. 3 Write short answers to any Eight (8) of the following 16

i	Why intermolecular forces are weaker than intramolecular forces ?
ii	What are advantages of Vacuum distillation ?
iii	Differentiate between Isomorphism and polymorphism.
iv	Diamond is hard and electrical insulator. Justify it.
v	Explain Atomic Emission Spectrum.
vi	Define (a) Wave number (b) Frequency
vii	Write electronic configuration of Cr_{24} and Zn_{30}
viii	What is Moseley's law ? Give its mathematical expression.
ix	What do you mean by water of crystallization ? Give an example.
x	Why NaCl and KNO_3 are used to lower the melting point of ice ?
xi	Differentiate between instantaneous and average rate of a reaction.
xii	What do you mean by Homogeneous catalysis ? Give an example.

QUESTION NO. 4 Write short answers to any Six (6) of the following 12

i	How does the hybridization scheme explain the bond length ?
ii	Define electron affinity. Name the factors affecting it.
iii	The radius of an atom cannot be determined precisely. Give the reason.
iv	Why do the lone pairs of electrons on an atom occupy more space than bond pairs ?
v	Define standard enthalpy of formation. Give an example.
vi	Define exothermic reaction. Give an example.
vii	Differentiate between spontaneous and non-spontaneous process.
viii	What is anodized aluminium ?
ix	Give the electrode reactions during the recharging of lead accumulator.

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5.(A)	Define limiting reactant , write down the steps involved in identification of limiting reactant.	1+3
(B)	Define hydrogen bonding , how does it explain structure of ice (without diagram).	1+3
Q.6.(A)	Write a note on " Principal Quantum Number "	4
(B)	250 Cm^3 of the sample of hydrogen gas effuses four times as rapidly as 250 Cm^3 of an unknown gas. Calculate the molar mass of unknown gas.	4
Q.7.(A)	Discuss sp – hybridization with example of ethyne.	1+3
(B)	The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at $25^{o}C$. Calculate the solubility of the compound.	4
Q.8.(A)	Describe construction and working of a Bomb Calorimeter.	4
(B)	What is standard electrode potential ? How can it be measured ?	4
Q.9.(A)	What are continuous and discontinuous solubility curves ? Draw these curves to explain the answer.	2+2
(B)	Discuss homogeneous and heterogeneous catalysis in detail with two examples of each.	2+2

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question.

QUESTION NO. 1 11th Class Chemistry Objective Paper Group 2 DG Khan Board 2024

1 The order of rate of diffusion of gases NH_3 , SO_2 , Cl_2 and CO_2 is
(A) $NH_3 > SO_2 > Cl_2 > CO_2$ (B) $NH_3 > CO_2 > SO_2 > Cl_2$ (C) $Cl_2 > SO_2 > CO_2 > NH_3$ (D) $NH_3 > CO_2 > Cl_2 > SO_2$

2 Partial pressure of oxygen in lungs is :
(A) 760 torr (B) 320 torr (C) 159 torr (D) 116 torr

3 Which of the following is a Pseudo solid ?
(A) CaF_2 (B) Glass (C) NaCl (D) KCl

4 The number of Na ions which surround each Cl^- ion in the NaCl crystal is :
(A) 4 (B) 6 (C) 8 (D) 12

5 The e/m value for the positive rays is maximum for :
(A) H_2 (B) H_e (C) O_2 (D) N_2

6 The number of neutrons present in $_{19}K^{39}$ is :
(A) 18 (B) 19 (C) 20 (D) 39

7 Which of the following has zero dipole moment ?
(A) NH_3 (B) $CHCl_3$ (C) H_2O (D) CO_2

8 In Al_2O_3 , the ratio between the ions is :
(A) 1 : 2 (B) 2 : 1 (C) 2 : 3 (D) 3 : 2

9 Calorie is equivalent to :
(A) 0.4184 J (B) 41.84 J (C) 4.184 J (D) 418.4 J

10 The pH of human blood is :
(A) 7.0 (B) 7.35 (C) 4.0 (D) 6.5

11 In a mixture of 7 g of N_2 and 8 g of O_2 , the mole fraction of O_2 is
(A) 1 (B) 0.1 (C) 0.5 (D) 0.2

12 The cell in which electrical energy is converted into chemical energy is called :
(A) Galvanic cell (B) Electrolytic cell
(C) Fuel cell (D) Deniel cell

13 Indicate the enzyme which catalyzes the $C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2$:
(A) Diastase (B) Zymase (C) Urease (D) Invertase

14 18 g of H_2O sample has :
(A) 1 mole of H - atom (B) 0.5 mole of O - atom
(C) 6.22×10^{23} moles of H_2O (D) 6.02×10^{23} molecules of H_2O

15 The percentage of nitrogen in ammonia is :
(A) (14/34) x 100 (B) (14/17) x 100 (C) (3/17) x 100 (D) (28/38) x 100

16 Which one of the following does not undergo sublimation :
(A) $KMnO_4$ (B) Naphthalene (C) NH_4Cl (D) Iodine

17 The comparative rates at which the solutes move in paper chromatography depend on :
(A) Size of paper (B) R_f value of solute
(C) Temperature of the experiment (D) Size of the chromatographic tank used

CHEMISTRY		TIME: 2 HRS 40 MINUTES
GROUP : SECOND	SUBJECTIVE PART	MARKS: 68

SECTION-I

QUESTION NO. 2 Write short answers to any Eight (8) of the following 16

i	Process of cation formation is endothermic. Justify.
ii	What are homoatomic and heteroatomic molecules ? Give one example of each.
iii	Why actual yield is always less than theoratical yield ?
iv	How rate of filtration can be increased ?
v	What is safe and reliable method for drying the crystals ?
vi	Give two characteristics of ideal solvent used for crystallization.
vii	Define isotherm. What is the effect of temperature on isotherm ?
viii	What is quantitative definition of Charle's law ? Give its mathematical form.
ix	Define critical temperature. On which factor does it depends
x	Define pH and pOH. Give its mathematical form.
xi	Define common ion effect. Give one example.
xii	What are acidic and basic buffers. Give one example of each.

QUESTION NO. 3 Write short answers to any Eight (8) of the following 16

i	Define Lattice energy. Give example.
ii	Why transition temperature is shown by elements having allotropic forms and by compounds showing polymorphism. Give example.
iii	Iodine dissolves readily in Tetrachloromethan. Give reason.
iv	Water and ethanol can mix easily and in all proportions. Give reason.
v	Prove that $E = h c \bar{\nu}$
vi	Complete (or) write balanced equation for two Nuclear reactions. (a) $^{4}_{2}He + {}^{9}_{4}Be \longrightarrow$? (b) $^{14}_{7}N + {}^{1}_{0}n \longrightarrow$?
vii	Why is it necessary to decrease the pressure in the discharge tube to get the cathode rays ?
viii	How neutrons are used in the treatment of Cancer ?
ix	One molal solution of urea in water is dilute as compared to one molar solution of urea, but the number of particles of the solute is same. Justify.
x	Differentiate between ideal and non-ideal solutions.
xi	The rate of a chemical reaction is an ever changing parameter under the given conditions. Give reason.
xii	What is Pseudo first order reaction ?

QUESTION NO. 4 Write short answers to any Six (6) of the following 12

i	Dipole moment of CO_2 is zero , but that of SO_2 is 1.61 D why ?
ii	Anionic radius is more than its parent atom why ?
iii	Draw geometry of $BeCl_2$ molecule on the basis of VSEPR theory.
iv	Define covalent radius. Give one example.
v	Define thermochemistry.
vi	State standard enthalpy of solution. Give example.
vii	Define internal energy.
viii	Draw diagram of voltaic cell.
ix	Define electrochemistry.

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5.(A)	What is stoichiometry ? Give its assumptions. Mention two laws which help to perform the stoichiometric calculation	1+2+1
(B)	Define vapour pressure of liquids. Also explain manometric method for its determination.	1+3
Q.6.(A)	Calculate the density of CH_4 (g) at 0 °C and 1 atmospheric pressure.	4
(B)	Describe Millikan's oil drop method to measure the charge on electron.	4
Q.7.(A)	. Write down the four postulates of VSEPR theory.	4
(B)	N_2 (g) and H_2 (g) combine to give NH_3 (g). The value of K_c in this reaction at 500 °C is 6.0×10^{-2}. Calculate the value of K_p for this reaction.	4
Q.8.(A)	Define the following with examples. (i) Enthalphy (ii) Exothermic reaction (iii) Boundary (iv) Enthalpy of atomization	4
(B)	Write any four industrial importance of electrolytic process.	4
Q.9.(A)	Derive a relationship for $M_2 = \frac{K_b}{\Delta T_b} \cdot \frac{1000 W_2}{W_1}$	4
(B)	What do you the mean by the term " order of reaction " ? Explain by giving any three suitable examples.	1+3

PAPER CODE - 6487

11th CLASS 1st Annual 2023

CHEMISTRY
GROUP : FIRST

OBJECTIVE

TIME: 20 MINUTES
MARKS: 17

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QUESTION NO. 1

1 The solubility product of AgCl is 2.0×10^{-10} mol^2 dm^{-6} . The maximum concentration of Ag^+ ion in solution is
(A) 2.0×10^{-10} mol dm^{-3} (B) 1.41×10^{-5} mol dm^{-3} (C) 1.0×10^{-10} mol dm^{-3} (D) 4.0×10^{-20} mol dm^{-3}

2 18 g glucose is dissolved in 90 g of water the relative lowering of vapour pressure is equal to
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

3 The oxidation number of oxygen in OF_2 is
(A) + 1 (B) + 2 (C) - 2 (D) - 1

4 If salt bridge is not used between two half cells the voltage
(A) Decreases rapidly (B) Decreases slowly (C) Does not change (D) Drop to zero

5 The unit of rate constant is same as that of rat of reaction in
(A) First order reaction (B) Second order reaction (C) Third order reaction (D) Zero order reaction

6 The number of moles of CO_2 which contain 16 g of Oxygen
(A) 0.25 (B) 0.50 (C) 1.0 (D) 1.5

7 The number of isotopes of Tin are
(A) 3 (B) 7 (C) 9 (D) 11

8 Solvent extraction is an equilibrium process and is controlled by
(A) Law of mass action (B) Distribution law (C) The amount of solvent used
(D) The amount of solute used

9 The partial pressure of oxygen in air is
(A) 116 torr (B) 159 torr (C) 180 torr (D) 190 torr

10 The order of rate of diffusion of gases NH_3 , SO_2 , Cl_2 and CO_2 is
(A) $NH_3 > SO_2 > Cl_2 > CO_2$ (B) $NH_3 > CO_2 > SO_2 > Cl_2$ (C) $Cl_2 > SO_2 > CO_2 > NH_3$
(D) $NH_3 > CO_2 > Cl_2 > SO_2$

11 When water freezes at 0 °C its density decreases due to
(A) Cubic structure of Ice (B) Empty spaces present in structure of Ice (C) Change of bond length
(D) Change of bond angle

12 The molecules of CO_2 in dry ice forms the
(A) Ionic crystals (B) Covalent crystals (C) Molecular crystals (D) Metalic crystals

13 When 6 d orbital is complete the entering electron goes into
(A) 7 f (B) 7 s (C) 7 p (D) 7 d

14 Which of following molecule has zero dipole-moment
(A) NH_3 (B) $CHCl_3$ (C) H_2O (D) BF_3

15 In endothermic reaction the heat content of
(A) Product is more than that of reactants (B) Reactants is more than that of products
(C) Surrounding increases (D) Reactant and product is equal

16 Enthalpy of atomization of Na-metal is
(A) 90 kj/mole (B) 108 kj/mole (C) 120 kj/mole (D) 130 kj/mole

17 pH of human blood is maintained at
(A) 7.0 (B) 7.35 (C) 8.0 (D) 8.5

CHEMISTRY | **SUBJECTIVE** | **TIME : 2:40 HOURS**
GROUP : FIRST | **SECTION-I** | **MARKS : 68**

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following **16**

i	Calculate the mass in kilogram of 2.6×10^{20} molecules of SO_2
ii	Name any four methods for the separation of isotopes
iii	Differentiate between ion and molecular ion
iv	What is the difference between natural and artificial plasma ?
v	Derive Boyle's law from kinetic molecular theory of gases
vi	Gases deviate from ideal behavior more at 0 °C than at 100 °C . Give the reason
vii	What do you mean by line spectrum ? Give an example
viii	Write down the reactions when slow neutrons hit the copper metal
ix	What is $n + \ell$ rule ?
x	Define standard enthalpy of formation. Give an example
xi	Define the term heat and work
xii	What are endothermic reactions ? Give an example

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following **16**

i	Define heat of hydration. Give example
ii	How do you justify that freeing points are depressed due to the presence of solutes ?
iii	What do you mean by discontinuous solubility curve ?
iv	Differentiate between Homogeneous and Heterogeneous catalysis
v	How the mechanism of a chemical reaction can help to point out the rate determining step ?
vi	What is the effect of temperature on the activation energy of a reaction ?
vii	Define sublimation. Give an example
viii	How desiccator is used to dry the catalysts ?
ix	What is solvent extraction ?
x	Define cleavage plane. Give an example
xi	Water and the ethanol can mix easily in all proportions. Why ?
xii	How will you Justify that the structure of ice is just like that of diamond ?

QUESTION NO. 4 Write short answers of any Six (6) parts of the following **12**

i	Define bond order. Give an example
ii	What is bond energy ? Give an example
iii	What is AB_3 type molecule according to VSEPR theory ? Give an example
iv	What is Le Chatlier's principle ?
v	What is common ion effect ? Give an example
vi	How equilibrium constant k_c is helpful in prediction of direction of reaction ?
vii	What is voltaic cell ?
viii	What is the function of salt bridge ?
ix	What is Nickel-Cadmium battery ?

SECTION-II

Note: Attempt any Three questions from this section

Q.5 (A)	Define yield. Differentiate between actual and theoretical yield. How percentage yield can be calculated	1+2+1
(B)	250 cm^3 of hydrogen is cooled from 127 °C to - 27 °C by maintaining the pressure Constant. Calculate the new volume of the gas at this low temperature	4
Q.6 (A)	Define ionic solids. Discuss properties of ionic solids in detail	4
(B)	Define enthalpy of neutralization. Also discuss the glass calorimeter in detail	4
Q.7 (A)	Write down measurement of e/m value of electron by J.J. Thomson with diagram	3+1
(B)	The solubility of PbF_2 at 25 °C is 0.64 g cm^{-3} . Calculate the Ksp molar mass of Pb is 207 g. $mole^{-1}$ F = 19 g. $mole^{-1}$	4
Q.8 (A)	What is MOT ? How it explain the structure of oxygen molecule	4
(B)	Explain fuel cell in detail	4
Q.9 (A)	What are colligative properties ? Explain lowering of vapour pressure	1+3
(B)	Write four characteristics of a catalyst	1+1+1+1

PAPER CODE - 6482

11th CLASS – 1st Annual 2023

CHEMISTRY **TIME: 20 MINUTES**

GROUP : SECOND **OBJECTIVE** **MARKS: 17**

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 27 g of Al will react completely with how much of O_2 to produce Al_2O_3
(A) 8 g of O_2 (B) 16 g of O_2 (C) 24 g of O_2 (D) 32 g of O_2

2 The phenomenon of isotopy was first discovered by
(A) Soddy (B) Berzelius (C) Rutherford (D) Dalton

3 The solid which undergo sublimation
(A) NaCl (B) KBr (C) I_2 (D) KCl

4 Pressure remaining constant at which temperature the volume of gas will become twice of what it is at 0 °C
(A) 546 °C (B) 200 °C (C) 546 K (D) 273 K

5 Critical temperature of water vapours is
(A) 647.6 K (B) 405.6 K (C) 384.7 K (D) 304.3 K

6 In order to raise the boiling point of water up to 110 °C the external pressure should be
(A) Between 760 torr and 1200 torr (B) Between 200 torr and 760 torr (C) 765 torr
(D) Any value of pressure

7 Which of the following is pseudo solid
(A) CaF_2 (B) Glass (C) NaCl (D) NH_4Cl

8 Orbitals having same energy are called
(A) Hybrid orbitals (B) Valence orbitals (C) Degenerate orbitals (D) d – orbitals

9 Which of the following species has unpaired electron in antibonding molecular orbital
(A) O_2^{2+} (B) N_2^{2-} (C) B_2 (D) F_2

10 The heat of atomization of chlorine is
(A) 90 kj/mole (B) 95 kj/mole (C) 110 kj/mole (D) 121 kj/mole

11 The net heat change in a reaction is same whether it is brought about in one or several steps.It is known as
(A) Henry's law (B) Joule-principle (C) Hess's law (D) Law of conservation of energy

12 Equilibrium constant for the reaction at 2000 °C $2\,HF(g) \rightleftharpoons H_2(g) + F_2(g)$ is
(A) 10^{-5} (B) 10^{-7} (C) 10^{-9} (D) 10^{-13}

13 pH value for 1.0 M HCl solution is
(A) 0.0 (B) 0.5 (C) 0.7 (D) 0.8

14 A solution of glucose is 10 % w/v . The volume in which 1 g mole is dissolved will be
(A) 1 dm^3 (B) 1.8 dm^3 (C) 200 cm^3 (D) 900 cm^3

15 A single cell in lead accumulator battery provides
(A) 1 volt (B) 2 volts (C) 3 volts (D) 4 volts

16 Reaction which is responsible for production of electricity in voltaic cell is
(A) Redox reaction (B) Oxidation reaction (C) Reduction reaction (D) Hydrolysis

17 With increase of 10 °C temperature the rate of reaction doubles. This increase in rate of reaction is due to
(A) Decrease in activation energy of reaction
(B) Decrease in number of collision between reactant molecules
(C) Increase in activation energy of reactants (D) Increase in number of effective collisions

CHEMISTRY | **SUBJECTIVE** | **TIME : 2:40 HOURS**
GROUP : SECOND | **SECTION-I** | **MARKS : 68**

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following **16**

i	What is molecular ion ? How it can be generated ?
ii	Differentiate between Empirical formula and Molecular formula
iii	No individual Neon atom in the sample of the element has a mass of 20.18 amu. Justify
iv	What is aqueous tension ? How you can find pressure of a gas over water in the laboratory ?
v	Write two causes for deviation from ideality
vi	Derive the value of ideal gas constant ' R ' when the pressure is in Nm^{-2} and volume in m^3
vii	The e/m value for positive rays obtained from hydrogen gas is 1836 times less than that of cathode rays. Justify it
viii	Write shapes of p-orbital
ix	State Heisenberg's uncertainty principle. Write its mathematical form
x	Define enthalpy of combustion. Give one example
xi	Differentiate between system and surrounding
xii	What exothermic reaction ? Give one example

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following **16**

i	What is discontinuous solubility curve ? Give one example
ii	Define mole fraction. Give its mathematical form
iii	What do you mean by water of crystallization ? Give two examples
iv	Define the term " Activation of catalyst "
v	What is pseudo first order reaction ? Give an example
vi	Define heterogeneous catalysis with an example
vii	Earthenware vessels keep water cool. Explain with reason
viii	Define Transition temperature with an example
ix	Write down any two uses of liquid crystals
x	State distribution law
xi	What is the difference between Gooch's crucible and sintered glass crucible ?
xii	Define crystallization. What is basic principle of crystallization ?

QUESTION NO. 4 Write short answers of any Six (6) parts of the following **12**

i	What is bond order ? Give example
ii	Why water molecule has bent structure rather than tetrahedral geometry ?
iii	What is Electronegativity ?
iv	What are Basic Buffers ? Give example
v	Define law of mass action
vi	Reaction is exothermic but still the temperature of 400 – 500 °C is required to increase the yield of SO_3 . Give reason
vii	Define oxidation state. Give example
viii	What is electrolytic conduction ?
ix	Define Electro Chemical series

SECTION-II

Note: Attempt any Three questions from this section **8 × 3 = 24**

Q.5 (A)	Discuss the existence of an atom through experimental evidence of an atom
(B)	What pressure is exerted by a mixture of 2.0 g of H_2 and 8.0 g of N_2 at 273 K in a 10 dm^3 vessel
Q.6 (A)	What are molecular solids ? Give their properties
(B)	Discuss first law of thermodynamics and prove that $\Delta E = q_v$
Q.7 (A)	Describe J.J Thomson experiment to measure e/m value of electron
(B)	The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at 25 °C . Calculate the solubility of the compound
Q.8 (A)	What is meant by VSEPR theory ? Explain in detail , Also discuss structures of BF_3 and CH_4 in the light of VSEPR theory
(B)	Discuss electrode potential. How electrode potential is measured by SHE
Q.9 (A)	What are non ideal solutions discuss their types and give three examples of each
(B)	What is chemical kinetics ? How do you compare chemical kinetics with chemical equilibrium

CHEMISTRY DG Khan Board-2022 **TIME: 20 MINUTES**

GROUP : FIRST **OBJECTIVE** **MARKS: 17**

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 The largest number of molecules are present in
(A) 3.6 g of H_2O (B) 4.8 g of C_2H_5OH (C) 2.8 g of CO (D) 5.4 g of N_2O

2 Many elements have fractional atomic masses. This is because
(A) The mass of the atom is itself fractional (B) Atomic masses are average masses of isobars
(C) Atomic masses are average masses of isotopes
(D) Atomic masses are average masses of isotopes proportional to their relative abundance

3 The comparative rates at which the solutes move in paper chromatography , depend on
(A) The size of paper (B) Rf values of solutes (C) Temperature of the experiment
(D) Size of the chromatographic tank used

4 The solvent commonly used in solvent extraction is
(A) Methyl alcohol (B) Diethyl ether (C) Liquid ammonia (D) Hydrochloric acid

5 How should the conditions be changed to prevent the volume of a given gas from expanding when its mass is increased ?
(A)Temperature is lowered and pressure is increased (B) Temperature is increased and pressure is lowered
(C) Temperature and pressure both are lowered (D) Temperature and pressure both are increased

6 The order of the rate of diffusion of gases NH_3 , SO_2 , Cl_2 and CO_2 is
(A) $NH_3 > SO_2 > Cl_2 > CO_2$ (B) $NH_3 > CO_2 > SO_2 > Cl_2$ (C) $Cl_2 > SO_2 > CO_2 > NH_3$
(D) $NH_3 > CO_2 > Cl_2 > SO_2$

7 In order to raise the boiling point of water upto 110 °C , the external pressure should be
(A) Between 760 torr and 1200 torr (B) Between 200 torr and 760 torr
(C) 765 torr (D) Any value of pressure

8 Ionic solids are characterized by
(A) Low melting points (B) Good conductivity in solid state (C) High vapour pressures
(D) Solubility in polar solvents

9 When 6 d orbital is complete, the entering electron goes into
(A) 7 f (B) 7 s (C) 7 p (D) 7 d

10 Rutherford's model of atom failed because
(A) The atom did not have a nucleus and electrons
(B) It did not account for the attraction between protons and neutrons
(C) It did not account for the stability of the atom
(D) There is actually no space between the nucleus and the electrons

11 Which one has perfectly triangular shape ?
(A) $SnCl_2$ (B) CO_2 (C) SO_3 (D) NH_3

12 Which of the hydrogen halides has the highest percentage of ionic character ?
(A) HCl (B) HBr (C) HF (D) HI

13 If an endothermic reaction is allowed to take place very rapidly in the air , the temperature of the surrounding air
(A) Remains constant (B) Increases (C) Decreases (D) Remains unchanged

14 An excess of aqueous silver nitrate is added to aqueous barium chloride and precipitate is removed by filtration. What are the main ions in the filtrate ?
(A) Ag^+ and NO_3^- only (B) Ag^+ , Ba^{2+} and NO_3^- (C) Ba^{2+} and NO_3^- only (D) Ba^{2+} , NO_3^- and Cl^-

15 18 g glucose is dissolved in 90 g of water. The relative lowering of vapour pressure is equal to
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

16 If a strip of Cu metal is placed in a solution of $FeSO_4$
(A) Cu will be deposited (B) Fe is precipitated out (C) Cu and Fe both dissolve (D)No reaction takes place

17 In the rate equation of a reaction $2A + B \rightarrow$ products is , rate = $k [A]^2 [B]$, and A is present in large excess , then order of reaction is
(A) 1 (B) 2 (C) 3 (D) None of these

11th CLASS - 12022

CHEMISTRY
GROUP : FIRST

SUBJECTIVE
SECTION-I

TIME : 2:40 HOURS
MARKS : 68

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following 16

i	Law of conservation of mass has to obeyed during stoichiometric calculations. Give reason
ii	Why elements have fractional atomic masses ?
iii	Why we use the term relative atomic mass ?
iv	Why regular air cannot be used by sea divers ?
v	Real Gas show non ideal behavior Why ?
vi	Give any two applications of plasma
vii	Define Rf value and why it has no unit ?
viii	Differentiate between stationary and mobile phase
ix	Give applications of paper chromatography
x	Draw out and Labelled the Bomb calorimeter
xi	Burning of candle is spontaneous process. Justify it
xii	Justify Hess's law with an example

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following 16

i	Define hydrogen bonding
ii	Why evaporation causes cooling ?
iii	What is meant by anisotropy ?
iv	Differentiate between Allotropy and Polymorphism
v	State Hund's rule with example
vi	Why e/m value of cathode rays is equal to electron ?
vii	Differentiate between fast and slow neutrons
viii	Positive rays are also called canal rays why ?
ix	What are hydrates ? Give one example
x	Describe continuous solubility curve with graph and example
xi	What is negative catalysis. Give example
xii	Define half life period. What is its importance ?

QUESTION NO. 4 Write short answers of any Six (6) parts of the following 12

i	Differentiate between bonding molecular orbital and antibonding molecular orbital
ii	Why do the lone pairs of electrons occupy more space than the bond pairs ?
iii	The dipole moments of CH_4 and CO_2 are zero but that of H_2O is 1.85 D. Why ?
iv	The size of anion is larger than its parents neutral atom. Give the reason
v	Define standard enthalpy of neutralization. Give an example
vi	Differentiate between spontaneous and non-spontaneous process
vii	Why is it necessary to mention the physical states of the reactants and products in thermochemical equations ?
viii	How can copper be purified electrolytically ?
ix	Differentiate between electrolytic and voltaic cell

SECTION-II

Note: Attempt any Three questions from this section

Q.5 (A)	Define the following terms and give two examples of each (i) Gram Formula (ii) Gram ion (iii) Gram atom (iv) Percentage yield	(½ + ½) × 4 = 4
(B)	Explain Planck's quantum theory of radiations and derive the relation $E = h c \bar{v}$	4
Q.6 (A)	Calculate the density of $CH_{4\,(g)}$ at 0 °C and 1 atmospheric pressure , What will happen to the density if temperature is increased to 27 °C	2+2
(B)	Describe the construction and working of standard hydrogen electrode	2+2
Q.7 (A)	Draw the molecular orbital picture of O_2 molecule and also explain its paramagnetic nature	3+1
(B)	Define the following with suitable example (i) Enthalpy of Neutralization (ii) Enthalpy of formation	2+2
Q.8 (A)	Explain properties of ionic solids	4
(B)	What is the percentage ionization of acetic acid in a solution in which 0.1 mol of it has been dissolved per dm^3 of the solution	4
Q.9 (A)	Define hydrolysis. Explain it with two examples	1+3
(B)	Define enzyme. Mention three characteristics of enzyme catalysis	1+3

PAPER CODE - 6482

11th CLASS – 12022

CHEMISTRY **TIME: 20 MINUTES**

GROUP : SECOND **OBJECTIVE** **MARKS: 17**

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 The mass of one mole of electrons is
(A) 1.008 mg (B) 0.55 mg (C) 0.184 mg (D) 1.673 mg

2 Number of isotopes of calcium are
(A) 02 (B) 03 (C) 05 (D) 06

3 Comparative rates at which the solute moves in paper chromatography depends upon
(A) Size of paper (B) Rf value of solute (C) Temperature of experiment (D) Size of chromatographic tank

4 Rate of filtration can be increased by using
(A) Suction flask (B) Desiccator (C) Glass funnel (D) Cold finger

5 Pressure remaining constant at which temperature the volume of the gas will become twice of what it is at 0 °C
(A) 546 °C (B) 200 °C (C) 546 k (D) 273 k

6 The deviation of gas from ideal behavior is maximum at
(A) - 10 °C and 5.0 atm (B) – 10 °C and 2.0 atm (C) 100 °C and 2.0 atm (D) 0 °C and 2.0 atm

7 Acetone and chloroform are soluble to each other due to
(A) Ion dipole interaction (B) Instantaneous dipole (C) Intermolecular hydrogen bonding
(D) Debye forces

8 Amorphous solids
(A) Have sharp melting point (B) Undergo clean cleavage when cut with knife
(C) Have perfect arrangement of atoms (D) Can possesses small regions of orderly arrangement of atom

9 When 6 d orbital is complete , the entering electron goes into
(A) 7 f (B) 7 s (C) 7 p (D) 7 d

10 Velocity of photon is
(A) Independent of its wavelength (B) Depends on its wavelength (C) Equal to square of its amplitude
(D) Depends upon its source

11 Which of the following hydrogen halide has the highest percentage of ionic character ?
(A) HCl (B) HF (C) HBr (D) HI

12 In sp hybrid orbital percentage of S-character is
(A) 100 % (B) 25 % (C) 75 % (D) 50 %

13 In endothermic reaction the heat content of the
(A) Product is more than reactants (B) Reactants is more than products
(C) Both have equal heat contents (D) Both a and b are correct

14 The solubility product of AgCl is 2.0×10^{-10} mol^2 dm^{-6} . The maximum concentration of Ag^+ ions in solution is
(A) 2.0×10^{-10} mol dm^{-3} (B) 1.41×10^{-5} mol dm^{-3} (C) 1.0×10^{-10} mol dm^{-3} (D) 4.0×10^{-20} mol dm^{-3}

15 Molarity of pure water is
(A) 01 (B) 18 (C) 55.5 (D) 6

16 The cathodic reaction in the electrolysis of dil H_2SO_4 with Pt. electrode is
(A) Reduction (B) Oxidation (C) Both oxidation and reduction (D) Neither oxidation nor reduction

17 The unit of rate constant is the same as the rate of reaction in
(A) First order reaction (B) Second order reaction (C) Third order reaction (D) Zero order reaction

CHEMISTRY | **SUBJECTIVE** | **TIME : 2:40 HOURS**
GROUP : SECOND | **SECTION-I** | **MARKS : 68**

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following **16**

i	23 g of sodium and 238 g of uranium have equal number of atoms in them. Give the reason
ii	Calculate the number of water molecules in 10 g of ice
iii	What is the principle of mass spectrometry ?
iv	Give the main uses of paper chromatography
v	Write down the four characteristics of the solvent used for crystallization
vi	Define sublimation with an example
vii	Gases deviate more significantly from ideal behaviour at high pressure and low temperature. Why ?
viii	How do you differentiate between effusion and diffusion of the gases ?
ix	Prove that $d = \frac{PM}{RT}$
x	How does the equilibrium constant of a reaction tell us the direction of a chemical reaction ?
xi	How can NaCl be purified by common ion effect ?
xii	What is pka ? How is it show the strength of an acid ?

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following **16**

i	What are dipole – dipole forces ?
ii	What do you mean by intermolecular forces ?
iii	Hydrogen bonding is present in chloroform and acetone. Justify it
iv	One feels sense of cooling under the fan after bath. Justify
v	What is the reason for the production of positive rays ?
vi	What happen when a free neutron decays ?
vii	Define frequency and wave number
viii	What is continuous spectrum ?
ix	What is percentage weight/weight ?
x	Define Molarity. Give its equation
xi	Define rate of reaction. Give its units
xii	Define velocity constant and give equation

QUESTION NO. 4 Write short answers of any Six (6) parts of the following **12**

i	Why anionic radius is larger than parent atom ?
ii	Draw molecular orbital picture of He molecule
iii	Define Dipole moment and give its unit
iv	Explain angle in water is 104.5° instead of 109.5°
v	What is spontaneous and non-spontaneous process. Explain with example
vi	Define standard enthalpy of reaction. Give one example
vii	What is state function ? Give two examples
viii	What is the oxidation number of neutral molecule. Give one example
ix	Lead accumulator is a chargeable battery. Give reason

SECTION-II

Note: Attempt any Three questions from this section

Q.5 (A)	Describe combustion analysis to determine mass percentage of ' C ', ' H ' and ' O ' in an organic compound	4
(B)	Write four defects in Bohr's atomic model	1× 4
Q.6 (A)	Describe the construction and working of fuel cells	2+1+1
(B)	A sample of nitrogen gas is enclosed in a vessel of volume 380 cm^3 at 120 °C and pressure of 101325 Nm^{-2}. This gas is transferred to a 10 dm^3 flask and cooled to 27 °C. Calculate the pressure in Nm^{-2} exerted by the gas at 27 °C	4
Q.7 (A)	Discuss structure of Ethyne (C_2H_2) w.r.t sp hybridization	4
(B)	Define enthalpy and also explain pressure – volume work	4
Q.8 (A)	What is vapour pressure. Discuss manometric method to measure the vapour pressure of liquid	1+3
(B)	Calculate the pH of a buffer solution in which 0.11 molar CH_3COONa and 0.09 molar acetic acid solution are present. Ka = 1.85×10^{-5} for CH_3COOH	1+3
Q.9 (A)	Differentiate between ideal and non-ideal solutions	1×4 = 4
(B)	How order of reaction can be found by half life method ?	4

PAPER CODE - 6481

11th CLASS – 12021

CHEMISTRY | **TIME: 20 MINUTES**

GROUP : FIRST | **OBJECTIVE** | **MARKS: 17**

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 A limiting reactant is one which
(A) is taken in lesser quantity in grams as compared to other reactants
(B) is taken in lesser quantity in volume as compared to the other reactants
(C) Gives the maximum amount of the product which is required
(D) Gives the minimum amount of the product under consideration

2 The branch of chemistry which tells us the quantitative relationship between reactants and products is called
(A) Stoichiometry (B) Thermometry (C) Organic chemistry (D) Physical chemistry

3 Solvent extraction method is a particularly useful technique for separation when the product to be separated is
(A) Non volatile or thermally unstable (B) Volatile or thermally stable
(C) Non volatile or thermally stable (D) Volatile or thermally unstable

4 Temperature and number of moles are kept constant in
(A) Boyle's law (B) Charles's law (C) Avogadro's law (D) Dalton's law of partial pressure

5 Equal masses of methane and oxygen are mixed in an empty container at 25 °C. The fraction of total pressure exerted by oxygen is
(A) $\frac{1}{3}$ (B) $\frac{8}{9}$ (C) $\frac{1}{9}$ (D) $\frac{16}{17}$

6 NH_3 shows a maximum boiling point among the hydrides of Vth group elements due to
(A) Very small size of nitrogen (B) Lone pair of electrons present in nitrogen
(C) Enhanced electronegative character of nitrogen (D) Pyramidal structure of NH_3

7 Amorphous solids
(A) Have sharp melting points (B) Good conductivity in solid state
(C) Have perfect arrangement of atoms (D) Can possess small regions of orderly arrangement of atoms

8 Mass of an electron is
(A) 9.1095×10^{-31} kg (B) 6.022×10^{23} (C) 6.022×10^{22} (D) 10.10×10^{30}

9 The velocity of photon is
(A) Independent of its wave length (B) Depends on its wave length (C) Equal to square of its amplitude (D) Depends on its source

10 Minimum amount of energy required to remove an electron from its gaseous atom is called
(A) Ionization energy (B) Electron – Affinity (C) Oxidation (D) Reduction

11 Methane molecule contains type of hybridization
(A) SP (B) SP^2 (C) SP^3 (D) dSP^2

12 The property of a system which has some definite values for initial and final states is called
(A) State (B) State function (C) System (D) Surroundings

13 The reaction which proceeds in both forward and backward directions is called
(A) Irreversible reaction (B) Reversible reaction (C) Spontaneous reaction (D) Non spontaneous reaction

14 The pH of 10^{-3} moles of an aquous solution of H_2SO_4 is
(A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5

15 Osmotic pressure is an example of
(A) Colligative properties (B) Additive properties (C) Constitutive properties (D) Internal energy

16 Stronger the oxidizing agent greater is the
(A) Oxidation potential (B) Reduction potential (C) Redox potential (D) E.M.F of the cell

17 If the rate equation of the reaction $2A + B \rightarrow$ products is rate = $k[A]^2[B]$, and A is, present in large excess, the order of the reaction is
(A) 1 (B) 2 (C) 3 (D) 4

CHEMISTRY
GROUP : FIRST

SUBJECTIVE
SECTION-I

TIME : 2:40 HOURS
MARKS : 68

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following **16**

1	N_2 and CO have the same number of electrons , protons and neutrons
2	Law of conservation of mass has to be obeyed during stoichiometric calculations , explain
3	Why actual yield is always less than theoretical yield ?
4	Write down any two uses of chromatography
5	In solvent extraction technique , why repeated extraction using small portions of solvent are more efficient than using a single extraction but larger volume of solvent
6	Write formulas to interconvert various scales of temperature
7	State Dalton's law of partial pressures
8	Write down two characteristics of plasma
9	How density of an ideal gas can be calculated from ideal gas equation ?
10	Write two points of differences between ideal and non-ideal solutions
11	State Raoult's law in any two forms
12	What are Colligative properties ? Why are they called so ?

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following **16**

1	Why ethyl alcohol is soluble in water ?
2	Why HF is a weaker acid than HCl ?
3	What is Habit of crystal ?
4	What is meant by geometrical shape of solid ?
5	What are canal rays ?
6	What is reason for production of positive rays ?
7	What is planks constant ? Give its value
8	What is defect of Rutherford's atomic model
9	Why do we need Buffer Solutions ?
10	What is effect of catalyst on equilibrium constant ?
11	Define rate of reaction and give its units
12	What is Half life period of a reaction ?

QUESTION NO. 4 Write short answers of any Six (6) parts of the following **12**

1	Write two causes of chemical combination
2	What is the difference between ionic Radii and covalent Radii ?
3	Define ionization energy. Give one example
4	Differentiate between Bonding and Anti-Bonding molecular orbital
5	Differentiate between system and surrounding
6	Define Enthalpy of atomization. Give one example
7	Calculate the Oxidation Number of Manganese in $KMnO_4$
8	Write the difference between ionization and electrolysis
9	Explain that a salt bridge maintains the neutrality in the cell

SECTION-II

Note: Attempt any Three questions from this section **8 x 3 = 24**

Q.5 (A)	Define hydrogen bonding. Explain any three applications of hydrogen bonding
(B)	Calculate the number of grams of K_2SO_4 and water produced when 14 g of KOH are reacted with excess of H_2SO_4 . Also calculate the number of molecules of water produced
Q.6 (A)	Discuss in detail the practical applications of Daltons law of partial pressure
(B)	Give the characteristics of cathode rays
Q.7 (A)	Explain structure of CH_4 and $CH_2 = CH_2$ by atomic Hybridization process
(B)	State Hess's law and explain it with at least two examples
Q.8 (A)	N_2 and H_2 gases combine to give ammonia (NH_3) gas. The value of equilibrium constant (K_c) for this reaction at 500 °C is 6×10^{-2} . Calculate the value of K_p for this reaction
(B)	Name any three methods for finding order of a reaction and explain half life method
Q.9 (A)	Write not on elevation of Boiling point of a solution and relate it with molecular mass of solute in a solution
(B)	Explain working of voltaic cell along with its diagram

PAPER CODE - 6482

11th CLASS – 12021

CHEMISTRY **TIME: 20 MINUTES**

GROUP : SECOND **OBJECTIVE** **MARKS: 17**

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 Isotopes differ in
(A) Properties which depend upon mass (b) Arrangement of electrons in orbitals (C) Chemical properties (D) The extent to which they may be affected in electromagnetic field

2 27 g of Al will react completely with how much mass of O_2 to produce Al_2O_3
(A) 8 g of oxygen (B) 16 g of oxygen (C) 32 g of oxygen (D) 24 g of oxygen

3 Solvent extraction method is a particularly useful technique for separation when the product to be separated is
(A) Non volatile or thermally unstable (B) Volatile or thermally stable
(C) Non volatile or thermally stable (D) Volatile or thermally unstable

4 Number of molecules in one dm^3 of water is close to
(A) $\frac{6.02}{22.4} \times 10^{23}$ (B) $\frac{12.04}{22.4} \times 10^{23}$ (C) $\frac{18}{22.4} \times 10^{23}$ (D) $55.6 \times 6.02 \times 10^{23}$

5 Which of the following will have the same number of molecules at STP ?
(A) 280 cm^3 of CO_2 and 280 cm^3 of N_2O (B) 11.2 dm^3 of O_2 and 32 g of O_2
(C) 44 g of CO_2 and 11.2 dm^3 of CO (D) 28 g of N_2 and 5.6 dm^3 of oxygen

6 When water freezes at 0 °C , its density decreases due to
(A) Cubic structure of ice (B) Empty spaces present in the structure of ice
(C) Change of bond lengths (D) Change of bond angles

7 Amorphous solids
(A) Have sharp melting points (B) Undergo clean cleavage when cut with knife
(C) Have perfect arrangement of atoms (D) Can possess small regions of orderly arrangement of atoms

8 Orbitals having same energy are called
(A) Hybrid orbitals (B) Valence orbitals (C) Degenerate orbitals (D) d orbitals

9 The wave number of light emitted by a certain source is $2\times10^6 m^{-1}$. The wavelength of this light will be
(A) 500 nm (B) 500 m (C) 200 nm (D) $5\times10^7 m$

10 The amount of energy released by absorbing electron in the valence shell is
(A) Ionization energy (B) Electron affinity (C) Electronegativity (D) Atomization energy

11 The bond angle in ammonia molecule is
(A) 109.5° (B) 107.5° (C) 104.5° (D) 180°

12 The net heat change in a chemical reaction is same wheather it is brought about in two or more different ways in one or several steps. It is known as
(A) Henry's Law (B) Joule's Principle (C) Hess's Law (D) Law of conservation of energy

13 The term pH was introduced by
(A) Henderson (B) Millikan (C) Le-Chattilier (D) Sorenson

14 In Haber process , for formation of NH_3 , the process used is
(A) 100 atm (B) 200-300 atm (C) 600 atm (D) 1000 atm

15 The molal boiling point constant is the ratio of the elevation of boiling point to
(A) Molarity (B) Molality (C) Mole fraction of solvent (D) Mole fraction of solute

16 Stronger the oxidizing agent, greater is the
(A) Oxidation potential (B) Reduction potential (C) Redox potential (D) E.M.F of cell

17 In zero order reaction , the rate is independent of
(A) Temperature of reaction (B) Concentration of reactants (C) Concentration of product (D) Nature of product

CHEMISTRY | **SUBJECTIVE** | **TIME : 2:40 HOURS**
GROUP : SECOND | **SECTION-I** | **MARKS : 68**

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following **16**

1	Why 23 g of Na and 238 g of uranium have equal number of atoms in them ?
2	How Mg-atom is twice heavier than that of C-atom ? Explain
3	Define gram formula giving one example
4	What do you mean by partition chromatography ?
5	Define sublimation with an example
6	Write any two applications of plasma
7	Why pilots feel uncomfortable breathing at higher altitude and divers cannot use normal air ?
8	Deduce the SI unit of 'R'
9	What are isotherms ? What happens to the positions of isotherms when they are plotted at high temperature ?
10	Why the relative lowering of vapour pressure is independent of temperature ?
11	What is ebullioscopic constant ?
12	Define solubility with a suitable example

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following **16**

1	Draw the shape , axes and angles of Hexagonal System
2	Define Allotropy , with an example
3	In a very cold winter the fish in garden ponds owe their lives to hydrogen bonding ? Justify
4	Define Debye forces , give an example
5	Differentiate between continuous spectrum and line spectrum
6	Write down any two defects of Bohr's Atomic Model
7	Give any two postulates / points of Planck's Quantum theory
8	What is magnetic quantum number ? Give its value
9	Justify mixture of sodium acetate and acetic acid gives us the acidic buffer
10	Define common ion effect , with an example
11	Differentiate between Activated complex and Activation Energy
12	What is half life period ? Give an example

QUESTION NO. 4 Write short answers of any Six (6) parts of the following **12**

1	Find out the oxidation number of chromium in chromium chloride ($CrCl_3$)
2	What is the basic difference between Galvanic cell and electrolytic cell ?
3	Give difference between metallic and electrolytic conduction
4	Why it is necessary to mention physical state of reactants and products in a thermo chemical equation ?
5	Define the standard enthalpy of atomization by giving an example
6	Define Oxidizing agent , Justify with an example
7	Why oxygen molecule show paramagnetic behaviour
8	Distinguish between sigma and Pi bond
9	Predict the shapes of following molecules according to VSEPR Theory (i) Water (ii) $BeCl_2$

SECTION-II

Note: Attempt any Three questions from this section **8 x 3 = 24**

Q.5 (A)	Mg metal reacts with HCl to give hydrogen gas. What is the minimum volume of HCl solution (27 % by weight) required to produce 12.1 g of H_2 . The density of HCl solution is 1.14 g/cm^3 $Mg_{(s)} + 2\ HCl_{(aq)} \rightarrow MgCl_{2\ (aq)} + H_{2\ (g)}$
(B)	Define H – bonding , explain any three applications of H – bonding
Q.6 (A)	What is Kinetic Interpretation of temperature ? Explain
(B)	Derive a relation for the energy of the revolving electron
Q.7 (A)	Discuss the structure of CH_4 and NH_3 by orbital Hyberdization Method
(B)	Calculate Lattice energy of NaCl by Born – Haber Cycle
Q.8 (A)	Calculate pH of (i) 10^{-4} mol dm^{-3} of Ba $(OH)_2$ (ii) 1.0 mol dm^{-3} of NH_4OH which is 1 % dissociated
(B)	Explain half life method to find out order of a reaction
Q.9 (A)	Describe Beckmann's freezing point method for measurement of ΔT_f
(B)	Describe the electrolysis of molten sodium chloride and a concentrated solution of sodium chloride

11^{th} CLASS – 12019

CHEMISTRY (NEW COURSE)
GROUP FIRST
ACADEMIC SESSION : 2015 - 2017 TO 2018 – 2020

TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 The pressure of vapours maintain in ionization chamber of mass spectrometer during isotopic analysis is
(A) 10^{-5} torr (B) 10^{-7} torr (C) 10^{-9} torr (D) 10^{-11} torr

2 Volume occupied by one mole of gas at standard temperature and pressure is
(A) 54 dm^3 (B) 22.414 dm^3 (C) 2.24 dm^3 (D) 2.4 dm^3

3 Direct conversion of solid into its vapour is called
(A) Crystallization (B) Sublimation (C) Vapourization (D) Distribution

4 SI units of pressure is
(A) mmHg (B) atm (C) pound per square inch (D) Nm^{-2}

5 Deviation of gas from ideal behaviour is maximum at
(A) -10C° and 5.0 atm (B) -10C° and 2.0 atm (C) 100C° and 2.0 atm (D) 0C° and 2.0 atm

6 Acetone and chloroform are soluble in each other due to
(A) Intermolecular H-bonding (B) Ion dipole interaction
(C) Instantaneous dipole (D) London dispersion forces

7 The crystals of diamond is
(A) Ionic (B) Covalent (C) Molecular (D) Metallic

8 Lyman series occur in
(A) Visible region (B) U.V region (C) I.R. region (D) Micro-wave region

9 Orbitals having same energy are called
(A) Hybrid orbitals (B) Valence orbitals (C) Degenerate orbitals (D) D-orbital

10 Which of the following species has unpaired electrons in antibonding molecular orbitals
(A) O_2^{2+} (B) N_2^{2-} (C) B_2 (D) F_2

11 One of the following molecule is polar in nature
(A) CH_4 (B) CO_2 (C) SO_2 (D) CCl_4

12 Calorie is equivalent to
(A) 0.4184 j (B) 41.84 j (C) 4.184 j (D) 418.4 j

13 The pH of a solution is 9 ,the solution is
(A) Weakly acidic (B) Weakly basic (C) Strongly acidic (D) strongly basic

14 Molarity of pure water is
(A) 1 (B) 18 (C) 55.5 (D) 6

15 The salt when dissolved in water form a solution with pH greater than 7 is
(A) $CuSO_4$ (B) NaCl (C) NH_4Cl (D) Na_2CO_3

16 If the salt bridge is not used between two half cells then the voltage
(A) Decrease rapidly (B) Decrease slowly (C) Does not change (D) Drops to zero

17 In zero order reaction, the rate is independent of
(A) Temperature of reaction (B) Concentration of reactants (C) Concentration of products (D) Pressure

SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) questions of the following 16

1	What are monoisotopic elements ? Give name and symbol of such an element.
2	What is molecular ion ? Write formulas of any two of these ions
3	Define Avogadro's number .give its numerical values.
4	Write down four steps for complete quantitative determination of a sample of a substance.
5	State distribution law.
6	What is critical temperature of gas? Write name and formula of a gas whose critical temperature is above room temperature.
7	Describe two causes of deviation of real gas from ideal behaviour.
8	What is absolute zero? Show it by drawing a graph between volume and temperature.
9	State Graham's law of effusion. Give its equation.
10	What is upper consulate temperature? Give names of two liquids which are partially miscible with each other.
11	What is meant by a hydrate ? Give formulas of any two hydrates.
12	Why heat of hydration of Li^+ is greater than that of Cs^+ ?

QUESTION NO. 3 Write short answers any Eight (8) questions of the following 16

1	Boiling points of halogens increase going down the group .Give reason
2	Earthenware vessels keep the water cool. Explain.
3	Why do the ionic solids not conduct electricity in solid state ?
4	Define order of reaction and specific rate constant
5	Define transition temperature. Give one example.
6	Write down any two properties of neutron.
7	Explain atomic spectrum with one example.
8	Mention any two defects in Rutherford atomic model.
9	Define $(n+\ell)$ rule.
10	Discuss the effect of common ion on the solubility of sparingly soluble salt with one example.
11	How is direction of reaction predicted by knowing its Kc value?
12	Explain the effect of surface area on the rate of a chemical reaction with one example.

QUESTION NO. 4 Write short answers any Six (6) questions of the following 12

1.	Differentiate between bonding molecular orbital and anti-bonding molecular orbital.
2	Why polar bond is stronger than non-polar bond?
3	Why abnormality of bond length and bond strength in HI is less prominent than that of HCl.
4	Why atomic radii cannot be measured precisely?
5	Justify that heat of formation of compound is the sum of all the other enthalpies.
6	Describe Standard Enthalpy of solution with example.
7	How impure 'Cu' is purified by electrolysis?
8	How feasibility of reaction can be predicted from electrochemical series?
9	Write the reactions involved in alkaline battery.

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5 (A)	Define stoichiometry. Give its assumptions. Mention two important laws which help to perform the stoichiometric calculation.
(B)	Explain H-bonding .discuss any three applications of H-bonding
Q.6 (A)	Calculate the density of $CH_{4(g)}$ at 0 °C and one atmospheric pressure.
(B)	Write down the postulates of Bohr's atomic model.
Q.7 (A)	Draw the shape of O_2 molecules according to molecular orbital theory.
(B)	Define spontaneous and non-spontaneous process. Give two examples of each.
Q. 8(A)	The solubility of PbF_2 at 25 °C is 0.64 g/dm^{+3}. Calculate K_{sp} of PbF_2 Molar mass of PbF_2 = 245.2 g/mol.
(B)	Define enzyme. Mention three characteristics of enzyme catalysis.
Q.9 (A)	State Raoult's Law in three different ways.
(B)	Describe the construction and working of Galvanic cell .

CHEMISTRY (NEW COURSE) **OBJECTIVE** TIME: 20 MINUTES
GROUP SECOND MARKS: 17
ACADEMIC SESSION : 2015 – 2017 TO 2018 – 2020

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 The number of moles of CO_2 that contains 0.5 mole of Oxygen is
(A) 0.25 (B) 0.50 (C) 1.0 (D) 1.5

2 The mass of one mole of electrons in milligrams is
(A) 1.008 (B) 0.5500 (C) 0.1840 (D) 1.673

3 Gooch crucible is made of
(A) Glass (B) Paper (C) Teflon (D) Porcelain

4 The highest temperature at which a substance can exist as liquid state at its critical pressure is
(A) Absolute zero (B) Consulate temperature (C) Critical temperature (D) Transition temperature

5 The volume occupied by 1.4g N_2 at STP is
(A) 2.24 dm^3 (B) 22.4 dm^3 (C) 1.12 dm^3 (D) 112 cm^3

6 The molecules of CO_2 in dry ice forms the crystal of type
(A) Ionic (B) Covalent (C) Molecular (D) Metallic

7 Transition temperature of S_8 (monoclinic) $\rightleftharpoons$ S_8 (Rhombic) is
(A) 13.2 °C (B) 95.5 °C (C) 128 °C (D) 110 °C

8 In the ground state the electrons in atom are present
(A)Nearest to its nucleus (B) In its nucleus (C) In second shell (D) In last shell

9 Bohr's Atomic Model is contradicted by
(A) Plank's Quantum theory (B) Heisenberg's uncertainty principle
(C) Dual nature of matter (D) Rutherford's Atomic Model

10 Following halide has highest ionic character
(A) HBr (B) HCl (C) HF (D) HI

11 The carbon atom in C_2H_4 uses following orbitals for making covalent bonds
(A) Sp^3 (B) Sp^2 (C) Sp (D) dsp^2

12 One thermal calorie is equivalent to
(A) 0.418 J (B) 4.18 J (C) 41.8 J (D) 418 J

13 Consider following reaction as equilibrium , $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$ $\Delta H = -188 Kj^{-1}$
The correct statement about above reaction is
(A) Value of Kp decreases with increase in temperature
(B) Value of Kp decreases with increase in pressure
(C) Adding catalyst (V_2O_5) increase yield SO_3 (D) Value of Kp is equal to Value of Kc

14 The molal boiling point constant is the ratio of elevation in boiling point to
(A) Molarity (B) Molality (C) Mole fraction (D) Percentage composition

15 An aqueous solution of ethanol (C_2H_6O) in water has vapour pressure.
(A) Equal to that of ethanol (B) Equal to that of water
(C) More than that of water (D) Less than that of water

16 The standard electrode potential (in volt) of SHE is taken as
(A) 0.00 (B) 1.00 (C) 10.0 (D) 100

17 In zero order reaction the rate of reaction is independent of
(A) Temperature of reaction mixture (B) Concentration of reactants
(C) Concentration of products (D) Pressure on reaction mixture

CHEMISTRY (NEW COURSE) | SUBJECTIVE | TIME: 2:40 HOURS
GROUP SECOND | SECTION-I | MARKS: 68
ACADEMIC SESSION : 2015 – 2017 TO 2018 –2020

QUESTION NO. 2 Write short answers any Eight (8) questions of the following 16

1	Why experimental yield is less than that of theoretical yield?.
2	Define molecular formula. How it is related with empirical formula.
3	Law of conservation of mass has to be obeyed during stoichiometric calculation .Justify
4	How coloured impurities are removed from a crystalline substance?
5	Give two uses of chromatography.
6	Why pilots feel uncomfortable breathing at higher altitude?
7	State Graham's law of diffusion along with mathematical form.
8	Give two applications of Plasma.
9	Why lighter gases diffuse more rapidly as compare to heavier gases?
10	Why Molarity is temperature dependent but Molality is temperature independent.
11	Define colligative properties. Why they are so called?
12	Give two applications of colligative properties.

QUESTION NO. 3 Write short answers any Eight (8) questions of the following 16

1	Why heat of sublimation is greater than heat of vaporization ?
2	Why did the boiling point of noble gases increase within a group ?
3	Define amorphous solids and give two examples.
4	Heat of sublimation of iodine is very high. Justify.
5	How will you prove that cathode rays possess momentum?
6	Prove that $E = hc\bar{\nu}$
7	Why boiling point of water varies from sea level to Murree Hills?
8	How do you come to know that velocity of electron in higher orbit are less than in lower orbit?
9	Give equilibrium constant expression (Kc) for $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$
10	Give optimum conditions for synthesis of Ammonia gas by Haber's process.
11	The order of reaction may be in fraction. Explain.
12	A particular catalyst is suitable for a particular reaction. How do you explain ?

QUESTION NO. 4 Write short answers any Six (6) questions of the following 12

1	Define coordinate covalent bond with an example.
2	Differentiate between polar and non polar covalent bond.
3	Define bond order. Calculate the bond order of Nitrogen molecule.
4	H_2O is an angular molecule where as CO_2 is linear. Why?
5	State first law of thermodynamics Give its mathematical form.
6	Why is it necessary to mention the physical state of reactants and products in a thermo-chemical equation?
7	Define electrochemistry.
8	Calculate oxidation number of chromium in $K_2Cr_2O_7$ and $K_2Cr\ O_4$
9	Na and K can displace Hydrogen from dilute acid but Pt and Cu cannot. Justify it

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5 -(A)	What is a limiting reactant ? How does it control the quantity of the product formed ? Explain with examples.
(B)	Write four properties of covalent solids.
Q.6 -(A)	Calculate the mass of 1dm^3 of NH_3 gas at 30 °C and 1000 mmHg pressure, considering that NH_3 is behaving ideally.
(B)	How J. J. Thomson determine the e/m value of electron by discharge tube?
Q.7 -(A)	Define hybridization. Explain sp^2 hybridization with one example ?
(B)	How the enthalpy of combustion is measured by bomb calorimeter?
Q.8 -(A)	The solubility of PbF_2 at 25 °C is 0.64 gm^{-3}.Calculate Ksp of PbF_2 (Molar mass of PbF_2 = 245.2)
(B)	Discuss any four physical methods to determine rate of a reaction..
Q.9 -(A)	Write note on (i) Hydration (ii) Hydrolysis
(B)	Describe the construction and working of standard Hydrogen electrode.

PAPER CODE - 6481

(11th CLASS – 12018)

CHEMISTRY (NEW COURSE)
GROUP FIRST
ACADEMIC SESSION : 2015 – 2017 TO 2017 – 2019

TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

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QUESTION NO. 1

1 The volume occupied by 1.4 g of N_2 at STP is
(A) 2.24 dm^3 (B) 22.4 dm^3 (C) 1.12 dm^3 (D) 112 cm^3

2 27 g of Al will react completely with how much mass of O_2 to produce Al_2O_3
(A) 8 g of oxygen (B) 16 g of oxygen (C) 32 g of oxygen (D) 24 g of oxygen

3 Insoluble particles can be separated from liquid by
(A) Sublimation (B) Solvent extraction (C) Crystallization (D) Filtration

4 If absolute temperature of a gas is doubled and pressure is reduced to one half , the volume of gas will
(A) Remain unchanged (B) Increase four times (C) Reduce to $\frac{1}{4}$ (D) Be doubled

5 Dipole-induced dipole forces are also called
(A) London Dispersion Forces (B) Debye Forces (C) Hydrogen bonding (D) Huckel Forces

6 The molecules of CO_2 in dry ice form
(A) Ionic crystals (B) Covalent crystals (C) Molecular crystals (D) Any type of crystals

7 Which of the hydrogen halides has the highest percentage of ionic character ?
(A) HCl (B) HBr (C) HF (D) HI

8 Quantum number values for 2p orbitals are
(A) $n=2$, $\ell=1$ (B) $n=1$, $\ell=2$ (C) $n=1$, $\ell=0$ (D) $n=2$, $\ell=0$

9 Splitting of spectral lines when atoms are subjected to strong electric field is called
(A) Zeeman effect (B) Stark effect (C) Compton effect (D) Photoelectric effect

10 Geometry of SO_2 molecule is
(A) Linear (B) Angular (C) Tetrahedral (D) Trigonal pyramidal

11 For the reaction : $NaOH + HCl \longrightarrow NaCl + H_2O$, the change in enthalpy is called
(A) Heat of reaction (B) Heat of formation (C) Heat of neutralization (D) Heat of combustion

12 The solubility product of AgCl is 2.0×10^{-10} $mol^2\ dm^{-6}$ .The maximum concentration of Ag^+ ions in the solution is
(A) 2.0×10^{-10} mol dm^{-3} (B) 1.41×10^{-5} mol dm^{-3}
(C) 1.0×10^{-10} mol dm^{-3} (D) 4.0×10^{-20} mol dm^{-3}

13 The values of Kw of water at 25 °C is
(A) 0.11×10^{-14} (B) 0.30×10^{-14} (C) 1.0×10^{-14} (D) 7.5×10^{-14}

14 Which one of the following salt dissolves in water to form a solution with a pH greater than 7 ?
(A) Na Cl (B) Cu SO_4 (C) Na_2CO_3 (D) NH_4Cl

15 18 g of glucose is dissolved in 90 g of water .The relative lowering of vapour pressure is equal to
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

16 Stronger the oxidizing agent , greater is the
(A) Oxidation potential (B) Reduction potential (C) Redox potential (D) E.M.F. of cell

17 If the rate equation of a reaction $2A + B \longrightarrow$ products is , rate = $k[A]^2[B]$, and A is present in large excess , then order of reaction is
(A) 1 (B) 2 (C) 3 (D) Zero

PAPER CODE - 6481

(11th CLASS – 12018)

CHEMISTRY (NEW COURSE)
GROUP FIRST
ACADEMIC SESSION : 2015 – 2017 TO 2017 – 2019

TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

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(A) 8 g of oxygen (B) 16 g of oxygen (C) 32 g of oxygen (D) 24 g of oxygen

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(A) Sublimation (B) Solvent extraction (C) Crystallization (D) Filtration

4 If absolute temperature of a gas is doubled and pressure is reduced to one half , the volume of gas will
(A) Remain unchanged (B) Increase four times (C) Reduce to $\frac{1}{4}$ (D) Be doubled

5 Dipole-induced dipole forces are also called
(A) London Dispersion Forces (B) Debye Forces (C) Hydrogen bonding (D) Huckel Forces

6 The molecules of CO_2 in dry ice form
(A) Ionic crystals (B) Covalent crystals (C) Molecular crystals (D) Any type of crystals

7 Which of the hydrogen halides has the highest percentage of ionic character ?
(A) HCl (B) HBr (C) HF (D) HI

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(A) $n=2$, $\ell=1$ (B) $n=1$, $\ell=2$ (C) $n=1$, $\ell=0$ (D) $n=2$, $\ell=0$

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(A) Zeeman effect (B) Stark effect (C) Compton effect (D) Photoelectric effect

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(C) 1.0×10^{-10} mol dm^{-3} (D) 4.0×10^{-20} mol dm^{-3}

13 The values of Kw of water at 25 °C is
(A) 0.11×10^{-14} (B) 0.30×10^{-14} (C) 1.0×10^{-14} (D) 7.5×10^{-14}

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15 18 g of glucose is dissolved in 90 g of water .The relative lowering of vapour pressure is equal to
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

16 Stronger the oxidizing agent , greater is the
(A) Oxidation potential (B) Reduction potential (C) Redox potential (D) E.M.F. of cell

17 If the rate equation of a reaction $2A + B \longrightarrow$ products is , rate = $k[A]^2[B]$, and A is present in large excess , then order of reaction is
(A) 1 (B) 2 (C) 3 (D) Zero

PAPER CODE - 6482

DG Khan Board-2018

(11th CLASS – 2018)

CHEMISTRY (NEW COURSE)
GROUP SECOND
ACADEMIC SESSION : 2015 – 2017 TO 2017 – 2019

TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 The number of atoms present in 0.5 mole of Na is
(A) 1.0×10^{23} (B) 6.02×10^{23} (C) 2.04×10^{23} (D) 3.01×10^{23}

2 The mass of one mole of electrons is
(A) 1.008 mg (B) 0.55 mg (C) 0.184 mg (D) 1.673 mg

3 Solvent extraction is an equilibrium process and it is controlled by
(A) law of mass action (B) the amount of solvent (C) distribution law (D) the amount of solute

4 Equal masses of methane and oxygen are mixed in an empty container at 25 °C. The fraction of total pressure exerted by oxygen is
(A) $\frac{1}{3}$ (B) $\frac{8}{9}$ (C) $\frac{1}{9}$ (D) $\frac{16}{17}$

5 Heat change for one mole of a solid during converting it into liquid is called
(A) Molar heat of fusion (B) Molar heat of vaporization
(C) Molar heat of sublimation (D) Enthalpy change

6 Which of the following is a pseudo solid?
(A) CaF_2 (B) Glass (C) NaCl (D) Diamond

7 The limiting line of Balmer series lies in
(A) Visible region (B) U.V. region (C) I.R. region (D) X-rays region

8 What is the value of $(n + \ell)$ for the 3d sub-shell?
(A) 3 (B) 4 (C) 5 (D) 6

9 Which of the following molecules has zero dipole moment?
(A) NH_3 (B) $CHCl_3$ (C) H_2O (D) BF_3

10 The amount of energy released by absorbing an electron in the valence shell of an atom is
(A) Ionization energy (B) Electron affinity (C) Electro negativity (D) Bond energy

11 The number of fundamental ways of transferring energy into or out of system is
(A) One (B) Two (C) Three (D) Four

12 When Kc value of a reaction is very small, the equilibrium position lies to
(A) Left (B) Right (C) May be left or right (D) Can not be predicted

13 The pH of 10^{-3} mol dm^{-3} of an aqueous solution of H_2SO_4 is
(A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5

14 Molarity of pure water is
(A) 1 (B) 18 (C) 55.5 (D) 6

15 The molal boiling point constant is the ratio of the elevation in boiling point to
(A) Molarity (B) Molality (C) Mole fraction of solvent (D) Mole fraction of solute

16 Oxidation number of " Cr " in $K_2Cr_2O_7$ is
(A) +2 (B) +4 (C) +6 (D) +8

17 Hydrolysis of Tertiary butyl bromide has order of reaction
(A) First (B) Pseudo first (C) Second (D) Third

CHEMISTRY (NEW COURSE)
GROUP SECOND
ACADEMIC SESSION: 2015 –17 TO 2017 –19

TIME: 2:40 HOURS
MARKS: 68

SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) questions of the following 16

1	Write importance of combustion analysis.
2	How many formula units are there in 100 g of KCl_3
3	Many chemical reactions taking place in our surrounding involve limiting reactants, give reason
4	Define sublimation.
5	How will you decolonize the undesired colour in a product ?
6	SO_2 is comparatively non ideal at 273K but behave ideally at 327 °C , give reason.
7	Write two applications of Dalton's Law of Partial Pressure.
8	Derive Avogadro's Law from KMT.
9	Define Buffer Capacity.
10	What is ionization constant of acids
11	What is effect of temperature on following system at equilibrium $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$ $\Delta H = -194.5$ kJ/mol
12	Define law of mass action .

QUESTION NO. 3 Write short answers any Eight (8) questions of the following 16

1	How do earthen ware vessels keep water cool ?
2	Why are the vapour pressure of solids far less than those of liquids ?
3	Why does ice float on water ?
4	Why are the ionic crystals highly brittle ?
5	Differentiate between ionization energy and electron affinity.
6	Define electro negativity, and how its difference between two atoms affects bond strength ?
7	How does NF_3 and BF_3 have different structural formulae although both have same type of molecular formula?
8	Define dipole moment and write the S.I. units of dipole moment .
9	What is thermo-chemical equation? Give its two examples.
10	State that burning of candle is spontaneous process.
11	Justify that the total volume of solution by mixing 100cm^3 of H_2O with 100 cm^3 of alcohol may not be equal to 200 cm^3 .
12	Justify that one molal solution of urea in H_2O is dilute as compared to one molar solution of urea in H_2O but the number of particles of solute are same?

QUESTION NO. 4 Write short answers any Six (6) questions of the following 12

1	Why are positive rays also called canal rays ? Give its reason.
2	Differentiate between orbit and orbital.
3	State Pauli's Exclusion principle and Hund's rule.
4	Give two importance of Moseley's law.
5	Differentiate between primary cells and secondary cells with two examples.
6	Voltaic cell is reversible cell. Justify it.
7	Define electrode potential and standard electrode potential.
8	Define order of reaction and velocity constant
9	What is heterogeneous catalysis ? Give two examples.

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

5-(A)	A sample of liquid consisting of carbon, hydrogen and oxygen was subjected to combustion analysis. 0.5439 g of the compound gave1.039 g of CO_2 , 0.6369 g of water. Determine the empirical formula of the compound.
(B)	Define liquid crystals ; write down three uses of liquid crystals.
6-(A)	State and explain Graham's law of diffusion. Give its experimental verification.
(B)	What are Quantum Number's. Explain Azimuthal Quantum Number.
7-(A)	How will you describe paramagnetic character of O_2 molecule on the bases of molecular orbital theory?
(B)	Define the following with one example (i) System (ii) Surrounding (iii) State function (iv) Endothermic reaction
8-(A)	What are buffer solutions ? Derive Henderson's equation for finding pH of a buffer.
(B)	Describe the electrolysis of aqueous solution of sodium chloride.
9-(A)	The vapour pressure of water at 30 °C is 28.4 torr. Calculate the vapour pressure of a solution containing 70 g of cane sugar ($C_{12}H_{22}O_{11}$) in 1000 g of water at same temperature. Also , calculate the lowering of vapour pressure.
(B)	Give names of different types of methods for determining order of a reaction and explain half-life method.