INTERMEDIATE PART-I (11th CLASS)

CHEMISTRY   PAPER-I (NEW SCHEME)   GROUP-I

TIME ALLOWED: 2.40 Hours   **SUBJECTIVE**   MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2.   **Attempt any eight parts.** $8 \times 2 = 16$

(i)   Why do the isotopes have same chemical but different physical properties?

(ii)   Define gram formula. Give two examples.

(iii)   What is Stoichiometry? Give its two assumptions.

(iv)   Why is there a need to crystallize the crude product?

(v)   What do you mean by solvent extraction? Which law does control it?

(vi)   How is absolute zero explained by drawing graph?

(vii)   Calculate the value of gas constant "R" in S.I units.

(viii) Derive Avogadro's Law from Kinetic molecular theory of gases.

(ix)   Lighter gases diffuse more rapidly than heavier gases. Give reasons.

(x)   One molal solution of urea is more dilute than one molar solution. Why?

(xi)   Define Raoult's Law. Give one of its mathematical expression

(xii)   What is discontinuous solubility curve? Give one example.

3.   **Attempt any eight parts.** $8 \times 2 = 16$

(i)   Why do fish and plants in ponds survive under blanket of ice during cold winters?

(ii)   Define Polymorphism. Give one example.

(iii)   Freshly cut metals show the property of metallic luster. Comment on the statement.

(iv)   Write down any two properties of Molecular Solids.

(v)   Calculate the mass of electron from its e/m value.

(vi)   Justify the statement that angular momentum of an electron revolving in orbit is quantized.

(vii)   How was dual nature of electron verified by Davisson and Germer?

(viii) State Aufbau principle. Write electronic configuration of Sodium $(_{11}Na)$ following this principle.

(ix)   Define the given terms: (a) common ion effect   (b) solubility product

(x)   What is the difference between heat and temperature?

(xi)   Define pseudo first order reaction. Given one example.

(xii)   Write down two examples to explain the activation of catalyst.

4.   **Attempt any six parts.** $6 \times 2 = 12$

(i)   Differentiate between exothermic and endothermic reactions.

(ii)   Define Ionization energy. How does it vary in periodic table?

(iii)   Ionic radii of anions are greater than their parent atoms. Why?

(iv) CO_2 is non-polar whereas H_2O is polar molecule. Give reason.

(v)   Define Dipole Moment. Give its various units.

(vi)   State 1st law of thermodynamics.

(vii)   Define oxidation number. Calculate oxidation number of ' Mn " in $KMnO_4$.

(viii) Differentiate between a primary cell and a secondary cell.

(ix)   Write electrochemical reactions taking place in Alkaline battery.

SECTION-II

NOTE: - Attempt any three questions. $3 \times 8 = 24$

5.(a)   Describe combustion analysis to determine mass percentages of C, H and O in an organic compound.   4

(b)   What is meant by Hydrogen Bonding? How it explains the helix structure of proteins?   4

6.(a)   Write defects in Bohr's model of an atom.   4

(b)   One mole of methane gas is maintain at 300K its volume is $250 Cm^3$. Calculate the pressure exerted by the gas.   4

7.(a)   What is Electron Affinity? How does it show variation along groups and periods in the periodic table?   4

(b)   Describe the Hess's Law of Constant Heat Summation and give one example to explain it.   4

8.(a) $N_{2(g)}$ and $H_{2(g)}$ combine to give $NH_{3(g)}$. The value of K_c in this reaction at $500^\circ C$ is 6.0×10^{-2}. Calculate the value of K_P for this reaction.   4

(b)   How does Arrhenius equation help us to calculate the energy of activation of a reaction?   4

9.(a)   Write Landsberger's method for determination of elevation of boiling point.   4

(b)   Define voltaic of Galvanic cell. Write its function with chemical equations.   4

CHEMISTRY   PAPER-I   (NEW SCHEME)   GROUP-I
TIME ALLOWED: 20 Minutes   **OBJECTIVE**   MAXIMUM 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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled.   Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) The largest number of molecules are present in:
   (A) 3.6g of H_2O (B) 4.8g of C_2H_5OH (C) 12.8g of CO (D) 5.4g of N_2O_5

(2) One mole of SO_2 contains: (A) 6.02×10^{23} atoms of Oxygen
   (B) 18.1×10^{23} molecules of SO_2 (C) 6.02×10^{23} atoms of S (D) 4 gram atoms of SO_2

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

(4) The deviation of a gas from ideal behaviour 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

(5) 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) $NH_3 > CO_2 > Cl_2 > SO_2$

(6) 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

(7) Diamond is a bad conductor because: (A) It has a tight structure   (B) It has a high density
   (C) There are no free electrons present in the crystal of diamond to conduct electricity
   (D) Is transparent to light

(8) In the ground state of an atom, the electron is present:
   (A) In the nucleus   (B) In the second shell   (C) Nearest to the nucleus   (D) Farthest from the nucleus

(9) Quantum number values for 2P orbitals are:
   (A) $n = 2$ $\ell = 1$ (B) $n = 1$ $\ell = 2$ (C) $n = 1$ $\ell = 0$ (D) $n = 2$ $\ell = 0$

(10) The number of bonds in Nitrogen molecule is:
   (A) One σ and one π (B) One σ and two π (C) Three sigma only   (D) Two σ and one π

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

(12) The change in heat energy of a chemical reaction, at constant temperature and pressure is called:
   (A) Enthalpy change   (B) Heat of combustion   (C) Bond energy   (D) Internal energy change

(13) 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} $mol\, dm^{-3}$

(14) Which of the following solutions has the highest boiling point?
   (A) 5.85 % solution of Sodium Chloride   (B) 18.0% solution of Glucose
   (C) 6.0 % solution of Urea   (D) All have he same boiling point

(15) 18g of Glucose is dissolved in 90g 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 the salt bridge is not used between the two half cells, then the voltage:
   (A) Decreases rapidly   (B) Decreases slowly   (C) Does not change   (D) Drops to zero

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

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INTERMEDIATE PART-I (11ᵗʰ CLASS)

CHEMISTRY　PAPER-I　(NEW SCHEME)　　GROUP-II

TIME ALLOWED: 2.40 Hours　　**SUBJECTIVE**　　MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number on answer book,
as given in the question paper.

SECTION-I

2.　　**Attempt any eight parts.**　　　　　　$8 \times 2 = 16$

(i)　23g of Sodium and 238g of Uranium have equal number of atoms in them. Justify.

(ii)　Calculate mass in grams of 2.78×10^{21} molecules of CrO_2Cl_2.

(iii)　What is Avogadro's number? Give equation to relate Avogadro's number and mass of an element.

(iv)　How can you do decolourization of undesirable colours during crystallization?

(v)　Give differences between partition chromatography and adsorption chromatography.

(vi)　Define diffusion and effusion of gases.

(vii)　Write expression for Kinetic equation and root mean square velocity of gases.

(viii)　Derive Boyle's Law from Kinetic molecular theory of gases.

(ix)　Explain Joule-Thomson effect.

(x)　The sum of mole fractions of all the components is always equal to unity for any solution. Justify.

(xi)　Freezing points of a solution are depressed due to the presence of solutes. Explain it.

(xii)　Write any two properties of ideal solution.

3.　　**Attempt any eight parts.**　　　　　　$8 \times 2 = 16$

(i)　Define Polarizibility. How it affects London dispersion forces?

(ii)　Why water is liquid and H_2S is a gas?

(iii)　Why ice floats on surface of water?

(iv)　Vapour pressure of solids are far less than liquids, justify it.

(v)　Why positive rays are called Cannal rays?

(vi)　Write two defect of Bohr's atomic model.

(vii)　Describe Heisenberg Uncertainity Principle.

(viii)　Why it is necessary to decrease pressure in discharge tube to get cathode rays?

(ix)　Why water is a weak electrolyte?

(x)　What is the effect of catalyst on equilibrium?

(xi)　Differentiate between Homogenous and Heterogenous catalysis.

(xii)　How half life method is used to determine order of Reaction?

4.　　**Attempt any six parts.**　　　　　　$6 \times 2 = 12$

(i)　Define Ionic bond with example.

(ii)　Write down any two postulates of VSEPR theory.

(iii)　Define dipole moment. Give its various units.

(iv)　Why π (Pi) bonds are more diffused than sigma (σ) bond?

(v)　Prove $q_v = \Delta E$

(vi)　Differentiate Enthalpy of Neutralizaton and Enthalpy of combustion.

(vii)　Draw the diagram of S.H.E.

(viii)　Write down the chemical reaction involved in the Nickel Cadmium Cell.

(ix)　Give any two applications of electrochemical series.

SECTION-II

NOTE: - Attempt any three questions.　　　　　$3 \times 8 = 24$

5.(a)　Differentiate between actual yield and theoretical yield. Why is actual yield usually less than theoretical yield?　　　4

(b)　Define liquid crystals. Give their three applications in daily life.　　　4

6.(a)　1.00 mole of Methane (CH_4) gas is enclosed in a container of volume $250cm^3$ at 300k. Calculate the pressure of the gas, assuming it to be ideal.　　　4

(b)　Describe J. J. Thomson's experiment to measure charge to mass ratio of electron.　　　4

7.(a)　Define atomic orbital hybridization. Explain the structure of Ethene molecule.　　　4

(b)　Define Enthalpy of reaction. How is enthalpy of reaction (ΔH) measured by glass calorimeter?　　　4

8.(a)　N_2 and H_2 combine to give NH_3. The value of K_C in this reaction at $500°C$ is 6.0×10^{-2}. Calculate value of K_p for this reaction.　　　4

(b)　How will you determine the order of reaction with the help of Large Excess Method?　　　4

9.(a)　Explain measurement of Freezing point depression by Beckman's Method.　　　4

(b)　Describe the Electrolysis of aqueous salt of KNO_3.　　　4

CHEMISTRY   PAPER-I   (NEW SCHEME)   GROUP-II   MAXIMUM MARKS: 17
TIME ALLOWED: 20 Minutes   **OBJECTIVE**

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Q.No.1

(1) 27g of Al will reacts 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

(2) The number of moles of CO_2 which contain 8.0g of Oxygen:
  (A) 0.25   (B) 0.50   (C) 1.0   (D) 1.50

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

(4) A real gas obeying Van der Waal's Equation will resemble ideal gas if:
  (A) Both 'a' and 'b' are large   (B) Both 'a' and 'b' are small
  (C) 'a' is small and 'b' is large   (D)) 'a' is large and 'b' is small

(5) The molar volume of CO_2 is maximum at:
  (A) STP   (B) $127^\circ C$ and 1atm   (C) $0^\circ C$ and 2atm   (D) $273^\circ C$ and 1atm

(6) Acetone and chloroform are soluble in each other due to: (A) Intermolecular hydrogen bonding
  (B) Ion-dipole interaction   (C) Instantaneous dipole   (D) All these

(7) London dispersion forces are the only forces present among the:
  (A) Molecules of Water in liquid state   (B) Atoms of Helium in gaseous state at high temperature
  (C) Molecules of solid Iodine   (D) Molecules of Hydrogen Chloride gas

(8) The nature of positive rays depend on:
  (A) The nature of the electrode   (B) The nature of the discharge tube
  (C) The nature of the residual gas   (D) All these

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

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

(11) The Bond order of N_2 molecule is: (A) 0   (B) 1   (C) 2   (D) 3

(12) For a given process, the heat changes at constant pressure q_p and at constant volume q_v are related to each other as:
  (A) $q_p = q_v$ (B) $q_p < q_v$ (C) $q_p > q_v$ (D) $q_p = \dfrac{q_v}{2}$

(13) An excess of aqueous Silver nitrate is added to the 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^+ and Ba^{++} and NO_3^-
  (C) Ba^{++} and NO_3^- (D) Ba^{++} and NO_3^- and Cl^-

(14) 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

(15) Which of the following solutions has the highest boiling point?
  (A) 5.85 % solution of Sodium Chloride   (B) 18.0 % solution of Glucose
  (C) 6.0 % solution of Urea   (D) all have the same boiling point

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

(17) Which of the following statements is not correct about Galvanic cell?
  (A) Anode is negatively charged   (B) Reduction occurs at anode
  (C) Cathode is positively charged   (D) Reduction occurs at Cathode

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN
OBJECTIVE KEY FOR INTERMEDIATE ANNUAL EXAMINATION, 2019

Name of Subject: **Chemistry**   Session: **New Scheme**

Group: **1st**   Group: **2nd**

Q. Nos	Paper Code 2481	Paper Code 2483	Paper Code 2485	Paper Code 2487
1	C	C	D	A
2	C	A	C	B
3	B	B	C	D
4	A	C	A	C
5	B	A	B	C
6	D	B	C	A
7	C	A	A	B
8	C	C	B	C
9	A	D	A	A
10	B	A	C	B
11	C	C	D	A
12	A	C	A	C
13	B	B	C	D
14	A	A	C	A
15	C	B	B	C
16	D	D	A	C
17	A	C	B	B
18				
19				
20				

Q. Nos	Paper Code 2482	Paper Code 2484	Paper Code 2486	Paper Code 2488
1		3		
2				
3				
4				D
5	C			A
6	A			B
7	C			B
8	C			B
9	C			A
10	D			C
11	D			C
12	C			C
13	C			2
14				
15				
16				
17	D	B	C	B
18				
19				
20				

See Revised Key