

Total marks: 17    Paper Code \_\_\_\_\_    Time Allowed: 20 minutes

**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.

| Q.No | Question   | A                     | B                       | C                     | D                      |
|------|--|-----------------------|-------------------------|-----------------------|------------------------|
| 1    | Empirical formula of Glucose is  | $C_2HO$               | $CH_2O$                 | $CUO_2$               | $C_3H_2O$              |
| 2    | The number of molecules present in 9.0 gm of pure water are  | $3.01 \times 10^{23}$ | $6.02 \times 10^{23}$   | $9.03 \times 10^{23}$ | $1.20 \times 10^{24}$  |
| 3    | The drying agent used in a desiccator is   | Lithium Chloride      | Sodium Chloride         | Potassium Chloride    | Calcium Chloride       |
| 4    | The highest temperature at which a substance can exist as liquid. is called its  | Absolute              | Consolute               | Critical Temperature  | Transition Temperature |
| 5    | The boiling point of water at Mount Everest is   | $69^\circ C$          | $74^\circ C$            | $79^\circ C$          | $84^\circ C$           |
| 6    | The existence of an element in more than one crystalline forms is known as   | Isotropy              | Anisotropy              | Entropy               | Allotropy              |
| 7    | The Scientist Chadwick in 1932 discovered  | Proton                | Neutron                 | Electron              | Positron               |
| 8    | The values of Quantum numbers for 3P orbital are   | $n = 3, l = 1$        | $n = 2, l = 1$          | $n = 3, l = 1$        | $n = 3, l = 2$         |
| 9    | The compound which follows octet rule for bonding is   | $NaCl$                | $BCl_3$                 | $PF_5$                | $SF_6$                 |
| 10   | The Highest percentage of ionic character is in  | $HF$                  | $HCl$                   | $HBr$                 | $HI$                   |
| 11   | The amount of heat absorbed when one mole of gaseous atoms are formed from the element under standard conditions is called | Enthalpy of Formation | Enthalpy of atomization | Enthalpy of reaction  | Enthalpy of combustion |
| 12   | In Haber's process, the maximum yield of ammonia can be obtained by  | Increasing Pressure   | Decreasing pressure     | Increasing volume     | Increasing temperature |
| 13   | The salt dissolved in water forms a solution with pH greater than 7 is   | $NaCl$                | $Na_2CO_3$              | $CuSO_4$              | $NH_4Cl$               |
| 14   | The elevation of boiling point of 0.1 molal solution is  | $0.0052^\circ C$      | $0.052^\circ C$         | $0.52^\circ C$        | $5.2^\circ C$          |
| 15   | The oxidation number of Oxygen in $OF_2$ is  | +1                    | -1                      | -2                    | -2                     |
| 16   | In Lead Accumulator cell, the electrolyte used is  | 20 % $H_2SO_4$        | 30 % $H_2SO_4$          | 40 % $H_2SO_4$        | 50 % $H_2SO_4$         |
| 17   | Sucrose is converted into Glucose and fructose by enzyme catalyst called   | Invertase             | Maltase                 | Urease                | Zymase                 |

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## Model Paper Chemistry Subjective

Intermediate Part – I (11<sup>th</sup> Class) Examination Session 2015-2017 and onward

Total marks: 68

Time: 2:40 hours

### SECTION ----- I

2. Answer any Eight parts from the followings:-

8 × 2 = 16

- (i) The removal of an electron from a neutral atom is an endothermic process. Explain with reason.
- (ii) Actual yield is always less than theoretical yield. Give two reasons.
- (iii) Calculate the no. of molecules present in 34 g of H<sub>3</sub>PO<sub>4</sub>.
- (iv) Solvent extraction ferns the Distribution Law. Justify.
- (v) Define sublimation. Give one example.
- (vi) Calculate the value of General Gas constant in SI units.
- (vii) Pilots feel uncomfortable breathing at higher attitude. Give reason.
- (viii) Gases deviate from ideal behaviour at low temperature and high pressure. Give reasons.
- (ix) Table salt is an insulator in solid state. Justify.
- (x) Liquid crystals can be used in diagnosis of Cancer. Explain.
- (xi) Evaporation is a cooling process. Give reason.
- (xii) Graphite has slippery touch. Give reason.

3. Answer any Eight parts from the followings:-

8 × 2 = 16

- (i) Positive rays are also called canal rays. Give reason.
- (ii) The radius of first orbit of hydrogen atom is 0.529 Å<sup>o</sup>. Calculate the radius of 3<sup>rd</sup> orbit of hydrogen atom.
- (iii) Explain stark effect.
- (iv) Pressure can effect the production of Cathode Rays.
- (v) Dipole moment of CO<sub>2</sub> is zero. While that of H<sub>2</sub>O is 1.85 D. Explain.
- (vi) Explain the geometry of H<sub>2</sub>Se molecule.
- (vii) Electronegativity increases from left to right in periodic table. Give reason.
- (viii) Sketch the molecular orbital picture of O<sub>2</sub>.
- (ix) Enthalpy is a state function. Justify.
- (x) Born Haber's Cycle is another form of Hess's Law. Justify.
- (xi) Buffers are important in many areas of Chemistry. Justify.
- (xii) Define Le-Chatelier's principle.

4. Answer any Six parts from the followings:-

6 × 2 = 12

- (i) Give the applications of the solubility product.
- (ii) Depression of freezing point is a colligative property. Justify.
- (iii) Na<sub>2</sub>SO<sub>4</sub> · 10H<sub>2</sub>O shows discontinuous solubility curve. Give reason.
- (iv) What is the molality of a solution prepared by dissolving 5 g of Glucose in 250g of water.
- (v) Electromotive force can be calculated from electrochemical series. Explain with reason.
- (vi) Lead accumulators is a chargeable battery. Comment.
- (vii) Calculate the oxidation number of chromium in: (a) K<sub>2</sub>CrO<sub>4</sub> (b) K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>
- (viii) Differentiate between average and instantaneous rate of reaction.
- (ix) Explain auto-catalysis.

( P.T.O.)

## SECTION ----- II

**Note: Attempt any three questions.****(8 x 3 = 24)**

- 5.(a) What are London forces. Explain various factors affecting it. 4
- (b) Mg reacts with HCl to give hydrogen gas. What is the minimum volume of HCl solution (27 % by weight) required to produce 16.1 g of H<sub>2</sub>. The density of HCl solution is 1.14 g/cm<sup>3</sup>.  

$$\text{Mg}_{(s)} + 2\text{HCl}_{(aq)} \rightarrow \text{MgCl}_{2(aq)} + \text{H}_{2(g)}$$
 4
- 6.(a) What is hybridization? Explain Sp<sup>2</sup> hybridization with example. 4
- (b) State first law of thermodynamics and prove that  $\Delta E = q_v$
- 7.(a) What is Plasma? How is it produced? Give its two applications. 4
- (b) Describe Milikian's Oil Drop method for the measurement of charge of an electron. 4
8. (a) What is Standard Hydrogen Electrode (SHE)? How is it used for the measurement of electrode potential. 4
- (b) Calculate the pH of a buffer solution in which 0.11 M CH<sub>3</sub>COONa and 0.09 M acetic acid solutions are present. K<sub>a</sub> for CH<sub>3</sub>COOH is  $1.85 \times 10^{-5}$ . 4
9. (a) Explain Roul't's Law when both components are volatile. 4
- (b) Define order of reaction. How does half life method can be used for its determination. 4

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