PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
B.Sc, Summer 2017-18 Examination

Semester: 3	**Date: 22/05/2018**
Subject Code: 11105201	**Time: 10:30am to 1:00pm**
Subject Name: Fundamentals of Chemistry-I	**Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
 (a)Explain Arrhenius concept with its limitations.
 (b)Discuss about Charle's law.

Q.1. B) Answer the following questions (Any two)
 (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
  1.Derive K_b for Bronsted base.
  2.Write down the reaction of ethylene glycol with HCl.
 (b) Short note: Give any four applications of HSAB principle. **(04)**
 (c) Short note: Derive the ideal gas equation. **(04)**

Q.2. A) Answer the following questions.
 (a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
  1.The dissociation constants of formic acid and acetic acid are $21.4*10^{-5}$ and $1.81*10^{-5}$
  respectively. Find the relative strengths of the acids.
  2. 25.8 litre of a gas has a pressure of 690 torr and temperature of 17°C. What will be the
  volume if the pressure is changed to 1.85 atm and the temperature to 345K.
 (b) Short note: Explain the relative strength of acid with calculation of relative strength of weak **(04)**
 acids from K_a.

Q.2. B) Answer the following questions (Any two)
 (a) Short note/ Multiple choice questions.   (Each of 01 marks) **(03)**
  1.State the Dalton's law.
  2.Define HSAB principle.
  3.Define acid and base as per Bronsted-Lowry concept.
 (b) Short note: Write down the postulates of kinetic theory of gases. **(03)**
 (c) Short note: Give the Dow's process. **(03)**

Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
 (a)Give the preparations of glycerol.
 (b)Discuss acidic strengths of phenols and alcohols.

Q.3. B) Answer the following questions (Any two)
 (a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
  1.Explain the structure and bonding of phenol.
  2.Discuss Gay Lussac's law.
 (b) Short note: Discuss Avogadro's law. **(04)**
 (c) Short note: Write down any four reactions of monohydric alcohol. **(04)**

Q.4. A) Answer the following questions.
 (a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
  1.Explain Luxflood concept.
  2.Explain hydrogen bonding in monohydric alcohols.
 (b) Short note: Discuss the deviations of real gases from ideal behavior. **(04)**

Q.4. B) Answer the following questions (Any two)
 (a) Short note/ Multiple choice questions.   (Each of 01 marks) **(03)**
  1.Draw the structure of **2-methyl propan-1-ol** and **butan-2-ol**.
  2.State the van der Waals equation for real gases.
  3.Draw the structure of **o-cresol** and **catechol**.
 (b) Short note: Write the reaction for synthesis of phenol from cumene. **(03)**
 (c) Short note: Explain Lewis concept by giving one reaction **(03)**