

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**B.Sc./IMSC Winter 2017-18 Examination**

**Semester: 1**  
**Subject Code: 11100102**  
**Subject Name: Chemistry-I**

**Date: 18/12/2017**  
**Time: 10:30 to 1:00 pm**  
**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) Answer the following questions**

- (a) Explain Heisenberg's uncertainty principle giving equation. (04)
- (b) Explain Hund's principle giving suitable examples (04)

**Q.1. B) Answer the following questions (Any two)**

- (a) 1. Give structural formula for chloroform and resorcinol (02)  
 2. Give electron configuration of Cr and Cu (02)
- (b) Explain polarity of bond and dipole moment (04)
- (c) What is Resonance? Explain showing example of Benzene (04)

**Q.2. A) Answer the following questions.**

- (a) 1. Define Enantiomers and Diastereomers (02)  
 2. Give 2 points of difference between electrophile and nucleophile (02)
- (b) Write short note on inductive effect (04)

**Q.2. B) Answer the following questions (Any two)**

- (a) Define hybridization. Give hybridization for ethene and ethyne (03)
- (b) Give 3 point of difference between homolytic and heterolytic bond fission (03)
- (c) Define Hydrogen bond. Explain types of hydrogen bond (03)

**Q.3. A) Answer the following questions**

- (a) Give 4 points of difference between electrolytic and electronic conductors (04)
- (b) Explain law of decay for radioactivity and derive  $N=N_0e^{-\lambda t}$  (04)

**Q.3. B) Answer the following questions (Any two)**

- (a) 1. Half life time of radioactive element is 6.93 minutes, calculate decay constant. (02)  
 2. Derive relation between half life time and average life of radioactive element (02)
- (b) Explain stability of nucleus by n/p ratio (04)
- (c) Explain Soddy Fajan's displacement law for radioactive element (04)

**Q.4. A) Answer the following questions.**

- (a) 1. What is transference number? (02)  
 2. What is specific conductance? Give equation (02)
- (b) Give equation for phase rule. Draw labeled phase diagram for one component system: Water (04)

**Q.4. B) Answer the following questions (Any two)**

- (a) 1. Define carbocations (03)  
 2. Give example for stereogenic centre  
 3. What are radioactive isotopes?
- (b) Explain principle quantum number and Azimuthal Quantum number (03)
- (c) Explain Chain isomerism and position isomerism giving one example each (03)