



THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

CHE 2503/1415

Fundamentals of Chemistry-I

Time: 3 hours

Max: 75 Marks

(Answer any Five Questions)

(5 x 15 = 75)

1. a) What are quantum numbers? Write the four quantum numbers for the electrons in sodium (z=11).
b) Define hydrogen bonding. How is it classified? Discuss the significance of hydrogen bonding. (6+9)
2. a) Define the following terms with an example i) isotope ii) isobar iii) electron affinity.
b) Give the postulates of VSEPR theory. Explain the geometry of water and ammonia molecules. (6+9)
3. a) State and explain the Le Chatelier principle with examples.
b) Explain the term osmotic pressure. How will you measure the osmotic pressure? (7+8)
4. a) Mention the criteria for spontaneous and non-spontaneous reaction.
b) Explain the entropy change for the phase transformation of the substance. (7+8)
5. What are the types of organic reactions? Write the following types in details
i) Substitution reaction ii) Addition reaction iii) Elimination reaction
iv) Oxidation reactions v) Reduction reaction (15)
6. a) Write a brief note on carbocation, carbanion and free radicals.
b) Differentiate the thermal and photochemical reactions. (9+6)
7. Write a short note on i) fluorescence ii) phosphorescence iii) chemiluminescence (15)