

3006

**B.Tech. 2nd Semester G-Scheme
(Common for all branches) Examination,
May-2019**

CHEMISTRY-I

Paper-BSC-CH-101-G

Time allowed : 3 hours

[Maximum marks : 75]

Note : Attempt five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) What is electronegativity ?
- (b) Name the factors that govern the magnitude of crystal field splitting.
- (c) Distinguish between configuration and conformation.
- (d) What are the limitations of van der Waal's equation?
- (e) Define hardness of water.
- (f) What is Bathochromic and Hypsochromic shift ?

6×2.5=15

Unit-I

2. (a) Write schrodinger wave equation for hydrogen. What are the various parameters used in the equation ? What are radial and angular wave functions.

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- (b) Draw MO energy level diagram of NO molecule and predict its Bond order and magnetic properties.

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3. (a) What is Ionization energy ? On what factor it depends ? How does the ionization energy of the elements vary in a group and period.
- (b) Explain the polarization and polarizing power.

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Unit-II

4. (a) Draw various conformations of n-butane and compare their stability.
- (b) Distinguish between enantiomers and diastereomers with suitable example.
5. (a) What are the main types of organic reaction ? Explain substitution reactions giving suitable example.
- (b) Give the synthesis of Aspirin drug.

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Unit-III

6. (a) How is the hardness of a water sample estimated by EDTA method ? Describe the principle involved and the procedure.
- (b) What are critical constants ? Derive relationship between them.

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7. (a) Describe the zeolite process used for the softening of water. 8
- (b) Explain the mechanism of the following : 7
- (i) Pitting corrosion
- (ii) Galvanic corrosion

Unit-IV

8. (a) Discuss the applications of IR spectroscopy. 9
- (b) What is flame photometry? Describe its principle and applications. 6
9. (a) What is chemical shift and on what factors it depends? Explain. 8
- (b) Write note on Magnetic Resonance Imaging. 7

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