

**K. K. SHAH JARODWALA MANINAGAR SCIENCE COLLEGE**  
Rambaug, Ahemdabad-380008.

**M. Sc. Sem I**

**Che -401**

**Assignment I 2017**

**UNIT- I**

**Q.1** Derive the equation for  $\widehat{L}_z$  and prove that it is a hermitian operator.

**Q.2** Derive equation for angular momentum  $\widehat{L}_x$  in polar coordinates.

**Q.3** Show that solution of R-equation explains the value of principle quantum number 'n'

**UNIT- II**

**Q.1** Derive the Character Table for  $C_{3v}$  point group and give the rules to assign the Mullikan Symbol for irreducible representations.

**Q.2** Define 'Great Orthogonality Theorem' and rules derived from it with example.

**Q.3** Derive the matrix for proper axis of rotation  $C_{n(z)}$ .

**UNIT- III**

**Q.1** What is magnetic susceptibility? Derive the equation for Diamagnetic susceptibility.

**Q.2** Discuss Curie Law and curie Weiss Law.

**Q.3** Explain ferromagnetism and antiferromagnetism.

**UNIT- IV**

**Q.1** Explain Nitrogen Fixation.

**Q.2** Write a note on essential trace elements

**Q.3** Discuss the role of Fe in living organisms.