

**D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE – 1**  
**SEMESTER EXAMINATIONS**  
**APRIL – 2019**  
**INORGANIC CHEMISTRY - II**

15CPCH2B

Time: 3 Hrs

Max. Marks: 75

**SECTION – A (5 X 6 =30)****Answer ALL the questions.**

1. (a) Write the composition and applications of (i) ferrites (ii) Garnets.  
(Or)  
(b) Discuss the structure of Pervoskite
2. (a) Write note on Iron – Sulphur proteins  
(Or)  
(b) Explain briefly about vacancy and interstitial diffusion.
3. (a) Discuss Marcus theory in detail.  
(Or)  
(b) Define trans effect. Explain substitution reaction in square planar complexes.
4. (a) Explain in detail about the bubble chamber technique.  
(Or)  
(b) Explain the terms (i) K – electron capture (ii) nuclear isomerism
5. (a) What is nuclear fusion reaction? Explain why nuclear fusion reactions are known as thermo nuclear reactions?  
(Or)  
(b) Explain the working of cyclotron.

**SECTION – B (3 X 15 =45)****Answer any THREE of the following questions.**

6. (a) Explain why metal excess non stoichiometric compounds behave as semiconductors.  
(b) Discuss about ferro and antiferromagnetism.  
(c) Write short notes on high temperature super conducting materials. (5+5+5)
7. (a) Explain the structure and functions of vitamin B<sub>12</sub>.  
(b) Discuss the process of fixation of nitrogen. (7+8)
8. (a) Explain why the rate constants for the hydrolysis of [Co(NH<sub>3</sub>)<sub>5</sub>Cl]<sup>2+</sup> in basic solution is higher than in acid solution.  
(b) Explain the inner sphere reaction mechanism. (8+7)
9. (a) Discuss the principle and working of Scintillation counter. (5)  
(b) Discuss the shell model and liquid drop model of the nucleus. (10)
10. (a) Explain the terms nuclear cross section reaction, Q- value and threshold energy. (3+3+3)  
(b) Explain the working of fast breeder nuclear reactor. (6)