****

Register Number:

DATE: 13-04-2017

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**B.Sc. CHEMISTRY - IV SEMESTER**

**SEMESTER EXAM - APRIL 2017**

**CH-415: Chemistry**

**Time: 1½ hrs. Maximum marks : 35**

This question paper has **TWO** printed pages and **THREE** parts.

**PART A**

Answer any **THREE** of the following : **3 x 2 = 6 marks**

1. Give any two reasons for the anomalous behaviour of oxygen.
2. Which of the following molecules would you expect to be aromatic?



1. Give any two characteristics of a catalyst.
2. Calculate the number of components and phases for a system containing a solution of glucose.
3. What are freezing mixtures? Give its significance.

**PART B**

Answer any **FOUR** of the following : **6 x 4 = 24 marks**

1. Based on the oxidation states of phosphorus classify the oxyacids of phosphorus. Give an example for each. Write the structure of the tetrabasic acid of phosphorus.
2. Discuss the structure of XeF4 and ICl4– based on hybridization theory. (Atomic number of Xe = 54, F = 9, I = 53, Cl =17)
3. Using the concept of resonance stabilization of intermediate arenium ions, explain the orienting effect of -NO2 group in nitrobenzene towards further electrophilic substitution.

CH-415-A-17

1. How do you bring about the following reactions?



1. Derive an expression for the rate constant of an acid catalyzed reaction. Under what conditions does it represent i) specific H+ ion catalysis ii) general acid catalysis.
2. Discuss the application of phase rule to lead-silver system. Explain with the help of phase diagram the process of desilverization of argentiferous lead.

**PART C**

Answer any **ONE** of the following : **1 x 5 = 5 marks**

1. i) Oxide ores are fewer than sulphide ores. Why?

ii) KI3 exists whereas KF3 does not exist. Why?

iii)SF6 is known but SCl6 is not known.Why? (2+2+1)

1. i) Using ethyl magnesium bromide and any other organic compound/reagent, how do you synthesize the following compound?



ii) Complete the following sequence by filling the major organic product in each step.



(2+3)