STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2008-09 & thereafter)

Reg. No ………………………..

COURSE   :   **ALLIED – CORE**
PAPER   :   **GENERAL CHEMISTRY-II**
TIME   :   **30 MINUTES**   **MAX. MARKS : 20**

SECTION – A
TO BE ANSWERED ON THE QUESTION PAPER ITSELF.
ANSWER ALL THE QUESTIONS.   **(20x1=20)**

I   Choose the correct answer:

1. Polymer additives used to prevent aging of polymer materials are called _____.
   a) anitoxidants   b) fillers   c) plasticisers   d) stabilisers

2. Inversion of cane sugar follows _____ order kinetics
   a) zero   b) first   c) second   d) pseudo first order

3. The catalyst used in the contact process for manufacture of SO_2 is
    a) Pt   b) Mo   c) Fe   d) $AlCl_3$

4. Alcohol in equilibrium with its vapour has
   a) 1 phase 2 components   b) 1phase 1 component
   c) 2 phases 2 component   d) 2 phases 1 component

II   Fill in the blanks:

5. Bakelite is a thermo_____ polymer.

6. Polymers with regular repetition of monomer units are called _____.

7. A system with zero degree of freedom is called _____ system.

8. The rate of a reaction is directly proportional to the _____ of the reactant.

III   State if the following are true or false:

9. Neoprene rubber is a natural polymer.

10. In a one component system a maximum of 3 phases can co-exist in equilibrium.

11. The solid and vapour phases co-exist along the vapour pressure curve in a phase diagram.

12. The unit of rate constant for second order reaction is mol / lit / s.

..2

IV   Match the following:

13. Polyurethane   -   addition polymerisation

14. Super cooled water   -   spandex

15. Asbestos   -   metastable

16. PVC   -   filler

                              -        plasticizer

V   Answer in one or two sentences:

17. What are copolymers?

18. Define phase?

19. What are the types of catalytic reactions?

20. What is meant by rate determining step in a complex reaction?

⅄⅄⅄⅄⅄⅄⅄⅄

SUBJECT CODE: CH/AC/GC43

B.Sc. DEGREE EXAMINATION, APRIL 2011
BRANCH III - PHYSICS
FOURTH SEMESTER

COURSE   :   ALLIED – CORE
PAPER   :   GENERAL CHEMISTRY-II
TIME   :   2 HOURS   MAX. MARKS : 80

SECTION - B
Answer any four of the following: 4 x 10 = 40

1. a. How are polymers classified?   (5)
    b. What are the steps involved in free radical mechanism of addition polymerization?
                                                                       (5)

2. Discuss i. need for recycling of polymers   (5)
            ii. vulcanization of rubber   (5)

3. a. Explain what is meant by triple point and give one example.   (4)
    b. How many phases and components are present in each of the following systems?
       i. NH_4Cl (s) NH_3 (g) + HCl (g)
       ii. $CaCO_3$ (s)   CaO (s) + CO_2 (g)
       iii. aqueous solution of glucose in equilibrium with its vapour.   (6)

4. Explain the phase diagram for water system.   (10)

5. Discuss any two methods for determining the order of a reaction.   (10)

6. a. Calculate the half-life of a reaction whose rate constant is $0.450s^{-1}$ at 25^oC.   (4)
    b. Derive an expression for half-life of a reaction.   (6)

7. a. Differentiate between order and molecularity of a reaction.   (5)
    b. Explain Lindemann's theory of unimolecular reactions.   (5)

SECTION - C

Answer any two of the following: 2 x 20 = 40

8. a. How are polyethylene and PVC prepared?   (6)
    b. Give six applications of polymers.   (6)
    c. What are polymer fillers and plasticizers?   (8)

9. a. With reference to phase rule what is meant by i. Degrees of freedom
                                   ii. components
                                   iii. eutectic temperature
                                   iv. reduced phase rule equation.   (8)
    b. Draw the phase diagram for silver lead system and discuss the various aspects of it with reference to phase rule.   (12)

10. a. Explain activation energy on the basis of collision theory.   (5)
    b. Discuss the intermediate compound formation theory and the adsorption theory of catalysis.   (10)
    c. A reaction takes place at 323 K with a rate constant of 0.071 min^{-1}. How long will it take for the reaction to be 90% complete?   (5)

11. a. Derive an expression for rate constant of first order reaction.   (8)
    b. What is the effect of temperature on reaction rates?   (6)
    c. What are the factors affecting enzyme catalysed reactions.   (6)

⅄⅄⅄⅄⅄⅄⅄⅄⅄