STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2011-12 & thereafter)

SUBJECT CODE: 11CH/AC/GC44

B.Sc. DEGREE EXAMINATION, APRIL 2015
BRANCH III - PHYSICS
FOURTH SEMESTER

Reg. No ……..

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

SECTION – A
TO BE ANSWERED ON THE QUESTION PAPER ITSELF.

Answer all the questions: (30 x 1 = 30)

I. Choose the correct answer:

1. The properties of elastomers depends largely on
   a) vulcanization b) reinforcement c) compounding d) all of the above

2. Polymers isolated from natural materials are called
   a) Synthetic polymers b) Organic polymers
   c) Thermoplastic polymers d) Natural polymers

3. Phase rule states that
   a) 7 = C – P +2 b) P = C + F – 2 c) P + F = C – 2 d) P = C + F + 2

4. In Pb – Ag system at the entertic point, the number of phases is
   a) 2 b) 4 c) 0 d) 3

5. The number of reactant species that participate in the step leading to the chemical reaction is
   a) molecularity b) order c) zero order d) pseudo unimolecular

6. The unit for the rate of the reaction is
   a) mole $lit^{-1}sec^{-1}$ b) lit. mol^{-1}. sec^{-1} c) $sec^{+1}.mol^{-1}.lit^{-1}$ d) lit. sec. mol^{-1}

7. The catalyst used for the synthesis of ammonia in the Haber's process is
   a) $HgSO_4$ b) Zymase c) V_2O_5 d) Fe, Mo(promoter)

8. Which of the following is NOT a characteristic feature of a catalyst?
   a) specific b) initiates the reaction
   c) doesnot alter the equilibrium d) alters the speed of the reaction

9. The reagent employed to detect amino acid is
   a) bromine b) ninhydrin c) H_2SO_4 d) $KMnO_4$

10. Sucrose on hydrolysis gives
    a) glucose only b) fructose only c) glucose & fructose only d) none of the above

..2

II Fill in the blanks:

11. Kohlrausch's law is useful to determine the _____.
12. Introduction of a catalyst to a chemical reaction _____ the activation energy.
13. The unit of equivalent conductivity is _____.
14. In simple eutectic system, at the eutectic point, the number of degrees of freedom is _____.
15. The unit of viscosity is _____.
16. An aqueous solution NaCl is _____.
17. The rate of a given reaction is independent of concentration of reactants the order is _____.
18. The maximum number of degrees of freedom for water system is _____.
19. When a solution is diluted, its specific conductance _____.
20. The rate of the reaction increases with increase of _____.

III State whether True or False:

21. Glucose is optically inactive.
22. Sucrose is a non-reducing sugar.
23. Activated molecules along bring about the reaction.
24. Adsorption is an exothermic process.
25. Acrylic acid is a polymer.

IV Answer in a line or two:

26. conducting polymers

27. simple eutectic system

28. time for half-change

29. enzyme catalysis

30. zwitter ion

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2011-12 & thereafter)

SUBJECT CODE: 11CH/AC/GC44

B.Sc. DEGREE EXAMINATION, APRIL 2015
BRANCH III - PHYSICS
FOURTH SEMESTER

COURSE : ALLIED – CORE
PAPER : GENERAL CHEMISTRY-II
TIME : 2 ½ HOURS **MAX. MARKS : 70**

SECTION - B

Answer any five questions: **(5 x 6 = 30)**

1. Give the preparation and any two applications of the following polymers.
   a) Polyethylene b) PVC
2. What is the need for vulcanization?
3. Define phase, component and degree of freedom.
4. What is the effect of carbon in steel and the role of alloying elements in steel?
5. What is the effect of temperature on reaction rate and activation energy?
6. Discuss various (any two) methods to calculate the order of reactions.
7. Mention few industrial application of catalysis.

SECTION - C

Answer any two questions: **(2 x 20 = 40)**

8. (i) Briefly discuss on the following refractories. [10]
   a) alumina b) beryllia c) silicon carbide d) Zircon
   (ii) Draw and explain the phase diagram of Pb.Ag sys. [10]

9. (i) Calculate the rate constant of a reaction at 310K given the value of the rate constant at 300K to be 2.5×10^{-5} sec^{-1} and the energy of activation is 83.74 KJ/mole. [5]
   (ii) Derive the rate equation for the reaction A $\rightarrow$ Products. [5]
   (iii) State Lindeman's hypothesis. [5]
   (iv) Discuss on the intermediate compound formation theory. [5]

10. (i) How is the equivalent conductance determined conductometrically for a strong electrolyte?
    (ii) Determine the rate constant for acid catalysed ester hydrolysis.
    (iii) Give the photo colorimetric determination of copper.
    (iv) Give the reactions of glucose and fructose when reduced with sodium amalgam in aqueous solution.

▲▲▲▲▲▲▲▲▲▲