

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2011–12 and thereafter)

SUBJECT CODE: 11CH/AC/GC33
B.Sc. DEGREE EXAMINATION, NOVEMBER 2014
BRANCH III - PHYSICS
THIRD SEMESTER

REG.NO

COURSE : ALLIED CORE

PAPER : GENERAL CHEMISTRY- I

TIME : 30 MINUTES

MAX.MARKS : 30

(30x1=30)

SECTION – A

ANSWER ON THE QUESTION PAPER ITSELF

I. Choose the correct answer:

(10x1=10)

1. The planes which will be absent in simple cubic system is
a) 100 b) 200 c) 111 d) 110
2. In sodium chloride crystal each chloride ion is surrounded by
a) 6Na⁺ b) 4Na c) 6Cl⁻ d) 8Na⁻ ions
3. Which of the following solutions of NaCl will have the highest specific conductance
a) 0.001N b) 0.1N c) 0.01N d) 1.0N
4. By convention, the potential of NHE electrodes is taken arbitrarily as
a) 1 b) 0 c) 1.1 d) 0.764
5. The number of chiral centres in glucose
a) 1 b) 2 c) 3 d) 4
6. Glycine is a/an
a) Carbohydrate b) Protein c) Sulphur drug d) Amino acids
7. Amino acids containing one amino group & one carboxyl group are known as
a) acidic amino acids b) basic amino acids
c) neutral amino acids d) complex amino acids
8. A solution of acetic acid and ammonium acetate
a) can be a buffer
b) cannot be a buffer
c) can be a buffer only when NaOH is added to it
d) can be a buffer only if HCl is added to it
9. The colour given by proteins when subjected to ninhydrin test is
a) red b) blue c) orange d) purple
10. Which among the following is not a bidentate ligand
a) acetyl acetone b) 1,10-phenanthroline c) Ethylene diamine d) NH₃

II. Fill in the blanks:**(10x1=10)**

11. The number of Cs^+ & Cl^- ions in the body centered cubic lattice of CsCl is _____ respectively
12. A positive value for the emf of the cell indicates a _____ process in a given direction.
13. Electrolytic conduction is due to the movement of _____.
14. Sucrose on hydrolysis yields _____.
15. The metal ion present in Vitamin B_{12} is _____.
16. Sugar present in RNA is _____.
17. In haemoglobin, the oxidation state of the metal is _____.
18. $E^{\circ}_{\text{R}} - E^{\circ}_{\text{L}} =$ _____.
19. Zinc plating of iron is called _____.
20. Mathematical representation of Ostwald's dilution law is _____.

III. State whether the following are true or false:**(5x1=5)**

21. Molarconductance decreases on dilution.
22. $\text{Zn}|\text{Zn}^{2+} || \text{Cu}^{2+}|\text{Cu}$ is an example of reversible cell.
23. NH_4NO_3 is used as a salt bridge.
24. EDTA is a polydentate ligand.
25. In SI system, the units of specific conductance is Scm^{-1} .

IV. Answer in a line or two**(5x1=5)**

26. Define space lattice.
27. Define equivalent conductance.
28. What is meant by the term corrosion?
29. What is electro-osmosis?
30. What is a co-ordinate bond?

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SECTION – B

ANSWER ANY FIVE QUESTIONS :

5X6=30

1. Explain the applications of liquid crystals.
2. Compare the structure of diamond with that of graphite.
3. Describe the moving boundary method for the determination of transport number of H⁺ ions.
4. State and explain Kohlrausch's law. How do you measure the conductance of acetic acid at infinite dilution?
5. Explain the structure and function of DNA.
6. Draw the Haworth structure of glucose and sucrose.
7. Give the structure of Haemoglobin and its biological role.

SECTION – C

2X20=40

ANSWER ANY TWO QUESTIONS:

8. a. Explain the different packing patterns of crystals (10)
b. What is the principle underlying conductometric titration. Discuss the titration curve obtained in the titration of weak acid Vs strong base and strong acid Vs Strong base (2+4+4)
9. a. Discuss Debye-Huckel theory of strong electrolytes. (10)
b. What is meant by the term chelation? Give its importance with reference to EDTA (2+8)
10. Write notes on the following
i) Isoelectric point ii) Calomel electrode iii) Pb storage battery iv) ninhydrin test (5+5+5+5)
