



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS

FOURTH SEMESTER – APRIL 2016

CH 4206 - GENERAL CHEMISTRY FOR MATHS & PHYS. - II

Date: 27-04-2016
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 x 2= 20)

1. Define an unit cell.
2. Calculate the number of Na^+ and Cl^- ions present in NaCl unit cell.
3. o-Nitrophenol is more volatile than p-nitrophenol. Justify.
4. What are chromophores and auxochromes? Give examples.
5. What are enzymes? Give examples.
6. State the first law of thermodynamics. Mention the terms involved.
7. State Kohlrausch's law.
8. Draw the structures of sucrose and fructose.
9. How are carbohydrates classified? Give examples.
10. What is Bordeaux mixture? Give its applications.

Part-B

Answer any EIGHT questions.

(8 x 5= 40)

11. Draw and explain the structure of CsCl.
12. Discuss the properties of ionic and covalent crystals.
13. How are dyes classified based on structure?
14. What are antipyretics? Discuss the synthesis and uses of aspirin.
15. Explain the lock and key model of enzyme action.
16. Draw the structure of penicillin. Discuss the broad spectrum of penicillin.
17. Derive Kirchoff's equation.
18. When the same quantity of current is passed through aqueous solution of AgNO_3 and CuSO_4 , 3.623 g of Ag and 1.007 g of Cu are deposited. Calculate the equivalent weight of Cu. (Equivalent weight of Ag = 107.9)
19. Define the following terms: a) heat of neutralization b) heat of formation.
20. Discuss briefly the C-terminal and N-terminal amino acid analysis.
21. Explain in detail the applications of radio isotopes in agriculture and medical fields.
22. Give the differences between nuclear fission and fusion reactions.

Part-C

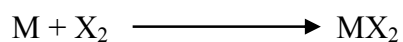
Answer any FOUR questions.

(4 x 10= 40)

23a. Define lattice energy.

(2)

- b. Consider an ionic compound MX_2 where M is a metal that forms a cation of +2 charge and X is a non-metal that forms an anion of -1 charge.



Draw the Born-Haber cycle for MX_2 formation.

(8)

24. Discuss the synthesis of following compounds

(a) Congo-red (b) Malachite green (c) Sulphanilimide.

(3+3+4)

25. (a) Briefly explain the characteristics of enzymes.

(4)

(b) Discuss in detail the factors affecting enzyme reaction.

(6)

26. What are proteins? Discuss in detail the primary and secondary structures of protein.

27. What are fertilizers? How do you differentiate fertilizers from manures? How is urea manufactured?

28a. What is the principle of conductometric titrations?

(4)

b. Explain the conductometric titration of HCl Vs NaOH.

(6)
