



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS

FOURTH SEMESTER – NOVEMBER 2016

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

Date: 11-11-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 × 2 = 20)

1. Define lattice energy.
2. The radius of Na^+ ion is 1.16 \AA and that of Cl^- is 1.67 \AA .
Predict the co-ordination number and the structure of NaCl using radius ratio rule.
3. o-Nitrophenol is more volatile than p-nitrophenol. Justify.
4. Give the difference between chromophores and auxochromes.
5. State Hess's law of constant heat summation.
6. How is aspirin prepared?
7. State Kohlrausch's law and mention its application.
8. What are oligosaccharides? Give an example.
9. Mention the differences between pesticides and herbicides.
10. What is Bordeaux mixture? Give its applications.

Part-B

Answer any EIGHT questions.

(8 × 5 = 40)

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

Part-C

Answer any FOUR questions.

(4 × 10 = 40)

- 23a. Differentiate between amorphous and crystalline solids. **(4)**
b. Construct the Born-Haber cycle for the formation of CsCl. **(6)**
24. Discuss the synthesis of following compounds. **(5+5)**
a) Congo-red b) Malachite green.
- 25a. Briefly explain the characteristics of enzymes. **(4)**
b. Discuss in detail the factors affecting enzyme action. **(6)**
26. What are proteins? Discuss in detail the secondary structure of protein.
- 27a. What are manures? How do you differentiate manures from fertilizers? **(5)**
b. Write a short note on renewable energy. **(5)**
- 28a. What is the principle of conductometric titrations? **(4)**
b. Explain the conductometric titration of HCl Vs NaOH. **(6)**
