

IV Semester B.Sc. Examination, June 2008  
(Semester Scheme)  
CHEMISTRY - IV

Time : 3 Hours

Max. Marks : 60

*Instruction: The question paper has two parts. Both the parts should be answered.*

PART - A

Answer any six of the following questions. Each question carries two marks. (6×2=12)

1. What is condensed phase rule ? Why is it called so ?

~~2.~~ Give any two industrial applications of catalysts.

~~3.~~ Explain mass defect.

~~4.~~ Define unit cell.

5. Give any two applications of liquid crystals.

~~6.~~ Explain briefly the influence of chromium and Tungsten on the properties of steel.

7. Explain the meaning of the terms

i) Ferrite

ii) Austenite

~~8.~~ Define Biochemical and Chemical Oxygen Demand.

9. How do aldehydes react with Hydrazine ?

~~10.~~ Explain tautomerism with an example.



## PART - B

Answer any 8 of the following questions. Each carries 6 marks. (8×6=48)

11. a) What are alloy steels ? How do they differ from plain carbon steels ? (4+2)  
b) Give the advantages of powder metallurgy.
12. a) Give an account on the treatment of steel. (4+2)  
b) How is ferrochrome manufactured ?
13. a) With a neat diagram discuss the crystal structure of sodium chloride indicating coordination numbers of anions and cations. (4+2)  
b) Explain Frenkel defects.
14. a) How is the crystal structure of sodium chloride determined by rotating crystal method ? (4+2)  
b) Mention the different elements of symmetry possessed by a cubic crystal.
15. a) What is meant by half life of a radioactive element ? Derive a relationship between half-life and decay constant. (4+2)  
b) Mention the differences between nuclear fission and fusion.
16. a) Write a note on the applications of radioactive isotopes. (4+2)  
b) What is C<sup>14</sup>-dating ?
17. a) Write Freundlich adsorption isotherm. How do you determine the constants of the isotherm ? (4+2)  
b) How does the study of the phase diagram of Ag-Pb system help in desilverization of argentiferrous-lead ?
18. a) Explain the meaning and significance of green chemistry. (4+2)  
b) How are radioactive wastes disposed ?
19. a) What is Cannizzaro's reaction ? (2+2+2)  
b) Give the mechanism of Benzoin condensation.  
c) Write a note on Wolff-Kishner reduction.
20. a) How are ketones prepared from  
i) Grignard reagent  
ii) Carboxylic acid ? (4+2)