

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, APRIL 2013**Sixth Semester****Core Course—APPLIED INORGANIC CHEMISTRY**

(Common for B.Sc. Chemistry Model I, Model II B.Sc. Petrochemicals and B.Sc. Chemistry Environment and Water Management)

Time : Three Hours

Maximum Weight : 25

Section A*Answer all questions.**A bunch of four questions carries a weight of 1.*

Choose the correct answer :

- I. 1. In rock Dating ——— ratio is Analysed.
(a) Pb to Bi. (b) U to Pb.
(c) U to Th. (d) Th to Bi.
2. Extra pure Germanium is obtained by :
(a) Vapour phase refining. (b) Kroll process.
(c) Oxidative refining. (d) Zone refining.
3. Van-Arkel process is used for the refining of :
(a) Ti. (b) U.
(c) Cu. (d) Ge.
4. Structure of XeO_4 is :
(a) Square pyramidal. (b) Square planar.
(c) Planar. (d) Trigonal Bipyramidal.
- II. 5. Formula of Marshall's acid is :
(a) $\text{H}_2\text{S}_2\text{O}_8$. (b) H_2SO_5 .
(c) $\text{H}_2\text{S}_4\text{O}_6$. (d) H_2SO_4 .
6. R_f value is always :
(a) Less than 1. (b) Greater than one.
(c) 1. (d) Cannot be predicted.
7. Radio I^{131} is used in the treatment of :
(a) Leukaemia. (b) Thyroid.
(c) Cataract. (d) Lymphoma.

Turn over

8. Inorganic Benzene is :

- (a) Borazine. (b) Boric acid.
(c) Boron Nitride. (d) Chloro Carboranes.

III. Fill in the blanks :

9. Self ionization reaction of liquid HF is _____.
10. Zeolites are _____.
11. One ore of Titanium is _____.
12. Expression for solubility product of Ag_2CrO_4 is $k_{sp} =$

IV. 13. Main constituents in Pyrex glass are _____.

14. One application of nuclear fusion reaction is in _____.
15. The strongest oxyacids of chlorine is _____.
16. Silicon rubbers are high molecular weight linear polymers usually _____ (name of compound).

(4 × 1 = 4)

Section B

Answer any **five** questions.
Each question carries a weight of 1.

17. How is silicon rubber prepared ? Mention *one* of its application.
18. What are Refractory Carbides ? Give *one* example.
19. How is Titanium obtained from TiCl_4 .
20. Why there is abrupt change in some curves of Ellingham diagram.
21. Name *two* peroxy sulphuric acid and give its structure.
22. Give any three similarities of Pseudohalides and Halides.
23. What is the principles of paper chromatography ? What are its applications ?
24. What are Nanotubes ? Give two of its applications.

(5 × 1 = 5)

Section C

Answer any **four** questions.
Each question carries a weight of 2.

25. Discuss the principle and applications of Differential scanning calorimetry.
26. Give an account of the preparation and properties of any two phosphorous based chain polymers.
27. Discuss the properties and applications of Fullerenes.

28. What is the principle in elimination of interfering anions. If not eliminated. How do they effect further analysis ? Discuss in detail.
29. Discuss briefly on conventional and Breeder type of nuclear reactors.
30. Describe briefly the extractive metallurgy of Uranium.

(4 × 2 = 8)

Section D

Answer any two questions.

Each question carries a weight of 4.

31. Discuss briefly on different techniques used for refining of metals with suitable examples for each.
32. (a) Discuss on the structure of Diborane.
(b) Give one method for the preparation of Diborane ? What are the different products formed when diborane is heated at high temperature of different conditions.
33. Write briefly on sulphur Based polymers its preparation, properties and uses in detail.

(2 × 4 = 8)