CHE-02

ASSIGNMENT BOOKLET

Bachelor's Degree Programme (B.Sc.)

INORGANIC CHEMISTRY

(Valid from 1st January, 2020 to 31st December, 2020)

It is Compulsory to submit the Assignment before filling in the Term-End Examination Form.

Please Note

- You can take electives (56 to 64 credits) from a minimum of TWO and a maximum of FOUR science disciplines, viz. Physics, Chemistry, Life Sciences and Mathematics.
- You can opt for elective courses worth a MINIMUM OF 8 CREDITS and a MAXIMUM OF 48 CREDITS from any of these four disciplines.
- At least 25% of the total credits that you register for in the elective courses from Life Sciences, Chemistry and Physics disciplines must be from the laboratory courses. For example, if you opt for a total of 64 credits of electives in these 3 disciplines, at least 16 credits should be from lab courses.
- You cannot appear in the Term-End Examination of any course without registering for the course. Otherwise, your result will not be declared and the onus will be on you.

School of Sciences
Indira Gandhi National Open University
New Delhi
(2020)

Dear Student,

We hope, you are familiar with the system of evaluation to be followed for the Bachelor's Degree Programme. At this stage you may probably like to re-read the section on assignments in the Programme Guide that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, which would consist of one tutor-marked assignment. The assignment is based on Blocks 1, 2, 3 and 4.

Instructions for Formatting Your Assignment

Before attempting the assignment, please read the following instructions carefully.

1. On top of the first page of your answer sheet, please write the details exactly in the following format:

ENROLMENT No.: …...……..……

NAME :……..……

ADDRESS :…..…….……

……..……

……..……

COURSE CODE : ….....…..

COURSE TITLE : ….....

STUDY CENTRE : ….....……

DATE:…….…….

(NAME AND CODE)

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2. Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3. Leave 4 cm margin on the left, top and bottom of your answer sheet.

4. Your answers should be precise.

5. While writing answers, clearly indicate the Question No. and part of the question being answered.

6. Please note that:

   i) The Assignment is valid from 1st January, 2020 to 31st December, 2020.

   ii) The response to this assignment is to be submitted to the Study Centre Coordinator within 12 weeks of the receipt of this booklet in order to get the feedback and comments on the evaluated assignment.

   iii) In any case, you have to submit the assignment response before submission of examination form for appearing in the term end examination.

7. We strongly suggest that you should retain a copy of your assignment responses.

   Wishing you all good luck.

Tutor Marked Assignment
INORGANIC CHEMISTRY
Elective Course in Chemistry

Course Code: CHE-02
Assignment Code: CHE-02/TMA/2020
Maximum Marks: 100

Note: Answer all the questions given below.

1. Compare Mendeleev's Periodic Table with Modern Periodic Table. (5)
2. What is ionisation energy? Explain the difference between electronegativity and ionisation energy (5)
3. What is difference between intermolecular hydrogen bonding and intramolecular hydrogen bonding? Explain with suitable examples (5)
4. Electropositivity, density and atomic radii of alkali metals increase down the group. Explain. (5)
5. Write the name and full electronic configuration of the following elements: (5)
   i) Be ii) Mg iii) Ca iv) Sr v) Ra
6. What is the significance of diborane ? (5)
7. What is borazine? Draw the valence bond structure of borazine. (5)
8. What is the difference between valency and oxidation state? Give the rule to deduce the oxidation state (5)
9. Discuss nitrogen cycle in your own words. (5)
10. How would you convert benzene into nitrobenzene? What is role of nitric acid in this reaction? (5)
11. Explain the following: (5)
    i) Carbon is the only element of Group 14, which forms stable multiple bond with an other carbon.
    ii) Trihalide of boron is a trigonal planar molecule. Explain
12. What are different types of carbides? Explain each of them briefly. (5)
13. What are the different types of interhalogen compounds? Draw one structure of each type. (5)
14. Describe VSEPR theory. Draw the structure of the following compounds on the basis of VSEPR theory. (5)
    i) XeF_4 ii) $XeOF_4$ iii) XeO_4 iv) XeF_6
15. What is oxoacid? Give any one reaction for preparation of the following; (5)
    i) Sulphurous acid
    ii) Sulphuric acid
    iii) Peroxomonosulphuric acid
    iv) Peroxodisulphuric acid
16. Explain why the decrease in atomic radius from sodium to chloride is greater than that from scandium to copper. (5)
17. Why the experimental value of magnetic moments for the transition elements generally differ from the spin-only values. (5)
18. Some of the lanthanides and actinides besides showing + 3 oxidation state also show other oxidation states. Which other factors may be responsible for this? (5)
19. What are ligands? Give three examples with their structures of commonly used ligands. (5)
20. Give details of the process of smelting pertaining to pyrometallurgy. (5)