S. NO.: 27 BATCH: 2017, 2018 Reg. No.:

END OF SEMESTER EXAMINATIONS, NOVEMBER - 2018
INORGANIC CHEMISTRY - I
SUBJECT CODE : 15P3CH01

MAJOR : M.Sc (Chemistry) SEMESTER : I
TIME : 3 HOURS MAX. MARKS: 70

SECTION - A (10 X 1 = 10)

Answer ALL the questions:

1. Compare the chemical properties of benzene and borazine.
2. Give the structure of S_4N_4 its reduction reaction with sodium azide.
3. Why hard and hard base complex is more stable?
4. Draw the island model of $P_3N_3Cl_3$ structure and give its structural properties.
5. Differentiate protic and aprotic solvents with examples.
6. What is called Kapustinski equation?
7. What are sub atomic particles?
8. Explain the terms cyclotron.
9. What is known as hot atom chemistry?
10. Define Spallation.

SECTION - B (5 X 4 = 20)

Answer ALL the questions:

11. a) Explain the structure and bonding in diborane.

[OR]

b) Discuss the structure of sheet silicates.

12. a) Classify the types of hard, soft acids and bases. Give examples of each type.

[OR]

b) Describe the Craig and paddock model of rings.

13. a) Discuss the properties of HF solvent and give its applications.

[OR]

b) Write a note on high temperature super conductors.

14. a) Define nuclear isomerism and give an example.

[OR]

b) Draw the Schematic diagram of GM counter and give its working nature.

15. a) What is meant by Q-value of nuclear reactions? How is it calculated?

[OR]

b) Write a note on stellar energy.

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SECTION - C (5 X 8 = 40)

Answer ALL the questions:

16. a) i) Discuss the chemistry of borazine.

ii) Explain the preparation and structure of tetraborane (10)

[OR]

b) i) Give the preparation, structure and bonding of carborane.

ii) Write a note on siloxane.

17. a) Describe the preparation, properties and structure of isopolychromates and isopoly molybdates.

[OR]

b) Explain the applications of HSAB with examples.

18. a) Discuss the various types of reactions in Liq. NH_3 as a solvent.

[OR]

b) i) How is Lattice energy of $NaCl$ calculated?

ii) What is known as solid state reaction? Give example.

19. a) i) Give an account on liquid drop model and Shell model to explain the stability of nucleus.

ii) Define meta stable nuclei.

[OR]

b) Write a note on

i) binding energy ii) Bubble chamber

20. a) i) Discuss the nuclear fission of ^{235}U .

ii) What is called carbon dating? Give its applications.

[OR]

b) i) Describe the synthesis of new elements.

ii) What is known as isotopic dilution analysis?

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