| Seat No. | |
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**Set P**

# B.Sc. (Semester - VI) (Old) (CGPA) Examination Oct/Nov-2019
## Chemistry (Special Paper –XII)
## INORGANIC CHEMISTRY

Day & Date: Wednesday, 09-10-2019 Max. Marks: 70
Time: 8:00 AM To 10:30 AM

**Instructions:** 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagram and give equations wherever necessary.

**Q.1 Fill in the blanks by choosing correct alternatives given below. 14**

1) The temperature at which the material becomes super conductor is called _____.
   a) Initial temperature b) Final temperature
   c) Critical temperature d) None of these

2) Corrosion increases with _____ in temperature.
   a) Increase b) Decrease
   c) Moderate d) None of these

3) Alkyberillium compounds are _____.
   a) electron deficient b) electron rich
   c) ionic compound d) coordinate compound

4) Actinides have _____ incomplete outer shells.
   a) one b) two
   c) three d) four

5) In valence shell of diborane, there are _____ electrons.
   a) 14 b) 12
   c) 10 d) 8

6) Among lanthanans _____ do not occurs in nature.
   a) Sm b) Pm
   c) Tm d) Nd

7) Borazine is isoelectronic with _____.
   a) pyridine b) diborane
   c) benzene d) toluene

8) When arsenic is added to silicon crystals _____ semi conductor is formed.
   a) n – type b) p – type
   c) n and p – type d) o – type

9) Effect of oxygen on corrosion is explained by _____.
   a) Faraday's rule b) Keir's principle
   c) Whitney principle d) Evan's rule

10) Atomic number of element having name un-nit-trium is _____.
   a) 133 b) 123
   c) 113 d) 103

11) Ni $(CO)_4$ has _____ structure.
   a) octahedral b) tetrahedral
   c) trigonal bipyramidal d) square planar

12) As the temperature increase, the conductivity of semiconductors.
   a) Increases  b) Decreases
   c) remain same  d) None of these

13) In actinide series, the differentiating electrons are added in _____.
   a) 4 f-subshell  b) 5 f-subshell
   c) (n-1) d sub-shell  d) (n-2) d subshell

14) Concept of super conductivity was introduced by _____.
   a) Pauling  b) Hund
   c) H.Bethe  d) Kamerling Onnes

**Q.2 A) Answer the following questions. (Any Four) 08**

1) Give applications of super conductors.
2) Why Ln and An are called inner transition elements?
3) Distinguish diborane and ethane
4) Define atmospheric and immersed corrosion.
5) Give synthesis of alkyl aluminium compounds.

**B) Write the Notes on: (Any Two) 06**

1) Heavy ion bombardment method
2) Protection methods of metals from corrosion
3) Bonding in metal carbonyls

**Q.3 A) Answer the following questions. (Any two) 08**

1) Explain separation of lanthanides by ion- exchange method.
2) Describe the structure of $XeO_4$.
3) Oxide film theory of passivity.

**B) Answer the following questions. (Any One) 06**

1) Define metallic bond. Explain free electron theory of bonding in metals.
2) Describe in detail structure of diborane.

**Q.4 A) Answer the following questions. (Any Two) 10**

1) Give the details electronics configuration of lanthanides.
2) Discuss with diagram, the classification of solids on the basis of band theory of metallic bonding.
3) Explain synthesis and structure of alkyl and aryl compounds of beryllium.

**B) Answer the following questions. (Any One) 04**

1) Explain structure of borazine.
2) Electrochemical theory of corrosion.

**Q.5 Answer the following questions. (Any two) 14**

**a)** What are actinides? Explain IUPAC nomenclature of super heavy elements with atomic number greater than 100.

**b)** Explain preparation, structure and properties of $YBa_2Cu_3O_{7-x}$ superconductor.

**c)** Describe in detail structures of $P_40_6$ and $P_40_{10}$.