B.Tech. Third Semester (Chem. / Poly / Food / Pulp / Oil / Petrochem) (Old)

Inorganic Chemistry : 3 SCE 1

P. Pages : 2 | AU - 3111

Time : Three Hours | Max. Marks : 80

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Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Diagrams and chemical equations should be given wherever necessary.
4. Discuss the reaction, mechanism wherever necessary.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) What is ionization energy? Write the factors affecting ionization energy. **6**

b) State and explain Heisenberg's uncertainty principle. **4**

c) Write the postulates of Bohr 'Theory'. **3**

OR

2. a) Derive the Schrodinger wave equation? Give significance of E and ψ. **6**

b) Explain the following. **4**
i) Electronegativity. ii) Atomic number.

c) Calculate the wavelength of the particle when the fastest serve in tennis is about 58m/s with a 6.0×10^{-2} kg tennis ball travelling at this speed. **3**

3. a) What is meant by lattice energy? Discuss Born Haber cycle. **6**

b) Explain the following. **4**
i) Covalent bond. ii) Ion pair effect.

c) What is hybridization? Discuss SP^3 hybridization with suitable example. **4**

OR

4. a) What is meant by ionic bond with example? Write the properties of ionic compound. **6**

b) What is hydrogen bonding? Explain intra and inter molecular hydrogen bond with example. **4**

c) Explain the following. **4**
i) Bond energy. ii) Co-ordinate bond.

5. a) Explain the werner coordination theory for octahedral complexes. **4**

b) Explain the following. **6**
i) Valence bond theory. ii) Ligand field theory.

c) Write the applications of chelates. **3**

OR

6.	a)	Explain inner and outer orbital complexes.	**4**
	b)	Explain the following. i) Chelates. ii) Ligand. iii) Co-ordination sphere.	**6**
	c)	Write the factors affecting the stability of complexes.	**3**

SECTION – B

7.	a)	Explain the extraction of iron process from ore.	**6**
	b)	What is meant by ore? Discuss the gravity separation method.	**4**
	c)	What is carbon steel? Give the industrial application.	**3**

OR

8.	a)	Explain the following. i) Reverberatory furnace. ii) Rotary kiln.	**6**
	b)	Write the importance of ore dressing? Discuss any two methods.	**5**
	c)	Define. i) Gangue. ii) Calcination.	**2**
9.	a)	What is meant by refractiones? Describe the manufacturing steps.	**6**
	b)	What are compositions in potash and borosilicate glass.	**4**
	c)	What are the basic raw material of ceramics.	**4**

OR

10.	a)	Discuss the manufacturing of glass.	**6**
	b)	How the color imparted in glass (any four).	**4**
	c)	How the refractories classified? Write the industrial applications.	**4**
11.	a)	Discuss the manufacture process of nitric acid and uses.	**6**
	b)	State the applications of activated carbon.	**4**
	c)	Write the names of sulphonating agent.	**3**

OR

12.	a)	Discuss the industrial manufacturing process of Sulphuric acid? And uses.	**6**
	b)	State the industrial uses of i) Lamp black. ii) Rare gas.	**4**
	c)	Write the names of nitrating agent.	**3**

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