RUV-01 BSC:05/10

## B.SC. CHEMISTRY FIRST SEMESTER INORGANIC CHEMISTRY-I BSC – 102

[USE OMR FOR OBJECTIVE PART]

Duration: 1:30 hrs.

Time: 15 mins.

a. F

c. Br

area.

(Objective)

Choose the correct answer from the following:

Marks: 10

Full Marks: 35

 $1 \times 10 = 10$ 

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1.	The hybridization of CHv is a. sp <sup>2</sup> c. dsp <sup>2</sup>	b. sp³ d. d²sp³
2.	The magnetic moment of $O_2^+$ ion is a. 2.82BM c. 4.87BM	ь. 1.73ВМ d. 5.92ВМ
3.	Which of the following is paramagnetic s $\mathbf{a}, O_2$ $\mathbf{c}, N_2$	ubstance b. O2¹ d. All of the above
4.	The oxidation state of 'B' in NaBH <sub>1</sub> a. +4 c.+2	b. +3 d. +5
5.	How many rows and columns are there a. 6 rows and 18 columns c. 18 rows and 7 columns	in the modern periodic table? b. 7 rows, 18 columns d. None of the above
6.	Which of the following has smallest size a. Na* c. Cl-	b. Mg <sup>2+</sup> d. F <sup>2</sup>
7.	Which of the following has lowest electro	on affinity?

The intensity of electromagnetic radiation is determined by the

c. Number of electrons striking a unit area.

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b. CI

d. None of the above.

d. I

Number of neutrons striking a unit b. Number of photons striking a unit area

9. Electrons that are in different energy levels have

a. Same probability distribution

b. Different probability istribution

c. Equivalent probability distribution

d. None of the above.

10. Electrons traveling in an elliptical orbit would have in addition to its angular momentum a component momentum along

a. Radial direction

b. Tangential direction

c. X- axis

d. None of the above.

## **Descriptive**

[Answer question no.1 & any two (2) from the rest]

Time: 1 hr. 15 mins.

**Eigen Functions?** 

a. Calculate the formal charge of NO2 molecule. 1+2+2 =5 b. How to calculate electronegativity in Mulliken's scale? c. Give a brief account of Dual Nature of electron. 5+5=10 a. Show the molecular orbital energy level diagram for  $O_2^+$  ion and calculate the bond order and magnetic moment for this ion. b. Explain the hybridization of PCl<sub>5</sub> and SF<sub>6</sub> molecule using valance bond theory. a. What is called hydrogen bonding? What are the different types 3+4+3 =10of hydrogen bonding? Explain with examples. b. Define electronegativity and electron affinity? Explain their periodic trends. c. What is Zeeman Effect? How this led to the formulation of Magnetic Quantum Number? a. Explain slater's rule. 5+5=10 b. Find out effective nuclear charge for a valence electron of Sulphur. a. What is Line Spectra? How is it produced? 2+3+5 =10b. Write notes on Heisenberg's Uncertainty Principle. c. Derive Schrodinger's Wave Equation. What are Eigen Values &

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Marks:25