



QP CODE: 20101100



20101100

Reg No :

Name :

B.Sc. DEGREE (CBCS) EXAMINATION, NOVEMBER 2020

Second Semester

Core Course - CH2CRT02 - THEORETICAL AND INORGANIC CHEMISTRY

(Common for B.Sc Chemistry Model I ,B.Sc Chemistry Model II Industrial Chemistry ,B.Sc Chemistry Model III Petrochemicals)

2017 ADMISSION ONWARDS

BC2E7CC3

Time: 3 Hours

Max. Marks : 60

Part A

*Answer any **ten** questions.*

Each question carries 1 mark.

1. Most of the space inside the atoms are -----.
2. What is the number of nodal planes in **s** orbital?
3. Why do silver halides have low solubility in water?
4. Give the hybridisation and geometry of BeCl_2 molecule.
5. What do you meant by regular and irregular geometry based on VSEPR theory?
6. Among the molecules NaCl , MgCl_2 and AlCl_3 which has more covalent character and why?
7. Calculate the bond order of He_2 . Does it exists?
8. Write the M O energy level order of CO.
9. How does hydrogen bond influence the acid strength of halogen acids?
10. Give two important uses of **KMnO_4** .
11. Why are lanthanides known as rare earth elements?
12. What is a cation exchanger?

(10×1=10)

Part B

*Answer any **six** questions.*

Each question carries 5 marks.

13. Explain Black body radiation with its spectrum.





14. Explain Pauli's Exclusion principle and Hund's rule
15. Write the Lewis dot structure of CO and NO₂ molecule.
16. Explain the important aspects of resonance with reference to the CO₃²⁻ ion.
17. On the basis of M O theory explain whether H₂ molecule exist or not.
18. Explain on the basis of free electron theory (a) High electrical conductivity of metals (b) metallic lusture
19. Energy is released during the conversion of F to F⁻ but energy is absorbed during the conversion of O⁻ to O²⁻ ion. Explain.
20. What is the origin of paramagnetism in transition metal compounds?
21. Discuss on the industrial uses of lanthanides.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. Derive the equation to calculate the energy of electron in Hydrogen atom and multi-electron ions?
23. Explain Valence Bond theory of covalent bonding with water molecule as an example. What are the limitations of V B theory?
24. Briefly discuss about van-der Waal's force.
25. What is Lanthanide contraction? Discuss the consequences of the lanthanide contraction.

(2×10=20)

