QP CODE: 19101720

19101720

Reg No : .....

Name : .....

B.Sc. DEGREE (CBCS) EXAMINATION, MAY 2019

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

6F4CE5B9

Maximum Marks: 60 **Time: 3 Hours**

Part A

Answer any **ten** questions.

Each question carries **1** mark.

1. Explain why blue stars are hotter than red stars.
2. What is the Eigen value?
3. State and explain octet rule.
4. Chloroform is polar, while carbon tetra chloride is non polar. Justify.
5. Draw the resonance structures of carbonate ion.
6. Give the hybridisation and geometry of PCl_5 molecule.
7. Stability of a molecule is directly proportional to bond order. Mention whether the statement is true or false.
8. List some characteristics of metals.
9. What is Keesom force?
10. Which transition element has positive electrode potential?
11. Why **Rh-Ir** and **Pd-Pt** exhibit almost similar size?
12. What is Mischmetal?

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Find the electronic state from which an electron jumps to emit radiations with wavelength 1212 A^0 and gives a line in Lymann series of the Hydrogen atom?

14. If a body with mass 2.0 kg is travelling at 200 cm/s within 1cm/s. What is the theoretical uncertainty in its position.

15. Write the postulates of VSEPR theory.

16. Comment on the relatioship between dipole moment of molecules and molecular structure.

17. On the basis of M O theory explain whether B_2 molecule exist or not.

18. Which is more volatile, o-nitro phenol or p-nitro phenol? Justify your answer.

19. Why is the ionization enthalpy of **B** is lower than that of **Be** and that of **O** is lower than that of **N**?

20. Describe the oxidizing character of $\mathbf{KMnO_4}$ in acidic and basic medium.

21. Why are lanthanides and actinides placed separately in the periodic table?

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. a)Why do fully filled and half-filled orbitals have extra energy explain with example
b) Explain Aufbau principle and explain the relative energies of different subshells using Bohr-Bury's rule in multi electron atoms

23. Define lattice energy. Derive Born-Lande equation.

24. Draw the MO energy level diagram of CO and NO molecules. Calculate the bond order and explain their magnetic properties.

25. Give a brief description on the occurrence and the extraction of lanthanides.

(2×10=20)