Government General Degree College, Dantan-II

3rd Semester B. Sc (H) Internal Examination-2021

Subject: Chemistry **Paper: CC-6T**

F.M: 20 **Time: 1h**

Answer the following questions (*any ten*) **10×2**

1. State and explain Bents rule.

2. Compare the thermal stability of sodium carbonate and lithium carbonate.

3. Arrange in increasing order of solubility of silver halide in water with explanation.

4. Draw M.O diagram of HF molecule.

6. Write a brief account on defects of solids.

7. Draw the Born-Haber cycle for the formation of CaO.

8. Write radius ratio rule and mention its application.

9. Compare the dipole moment between NH_3 and NF_3.

10. Compare the bond length between N_2^+ and N_2 using M.O theory.

11. What are magic numbers?

12. Complete the following nuclear reactions

(a) $^{57}_{27}Co\ (t,p) -$ (b) $^{110}_{51}X(d,-)\ ^{110}_{52}Y$

13. Show that mass of 1 amu equivalent to 931.4 MeV.

14. In an archaeological expedition, charcoal from an ancient fire pit was excavated. This sample showed a ^{14}C activity of 11.3 disintegration/minute/gram of carbon. The ^{14}C activity in the living tree was analyzed and found to have 15.3 disintegration/minute/gram of carbon. Find out the age of the charcoal sample. (Given $t_{\frac{1}{2}}$ of ^{14}C =1570 year.)

15. What happens to n:p ratio during (i) β-decay and (ii) electron capture decay.

16. Explain the concept of nuclear binding energy from binding energy curve.

17. Distinguish between nuclear fusion and nuclear fission reactions.

18. Define nuclear isomerism with example.

19. Explain radioactive tracer technique.

20. Write short note on Nuclear energy and power generation.