B.Sc. DEGREE EXAMINATION,APRIL 2019
I Year I Semester
Allied Chemistry - I

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Define isotones. Give examples.
2. What are magic numbers? Why are they called so?
3. Highlight the properties of Compressed Natural Gas.
4. How urea is prepared?
5. Write any one method for removing temporary and permanent hardness of water.
6. Give an example for substitution and addition reaction.
7. Define – (i) Electrophiles (ii) Nucleophiles
8. ? $\leftarrow$ – Ni— thiophene —Pd—$\rightarrow$?
9. State Stark-Einstein's law.
10. Define Quantum yield.
11. State group displacement law.
12. How $CHCl_3$ is prepared?

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Write a comparative account on the properties of α , β and γ rays.
14. How silicones are prepared?
15. Define BOD. Explain the procedure for its determination.
16. Explain the mechanism of nitration and sulphonation in benzene.
17. Explain the photochemical reaction of Hydrogen-Chlorine.
18. Write briefly on the preparation and properties of BHC and DDT.
19. Calculate the mass defect and Binding Energy per nucleon for ${}_6C^{12}$.

    You are given (i) mass of a proton = 1.00840 amu , (ii) mass of a neutron = 1.00894amu (iii) actual mass of Carbon = 12.0038 amu.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Explain the mechanism of nuclear fission and fusion reaction.
21. Write in detail any two methods of softening of water.
22. (a) Explain the hybridization of Ethane and Acetylene molecules.

    (b) What is Inductive effect? Compare the acidity of mono, di and trichloro acetic acid.
23. Complete the following reactions.

    I. Pyridine + $NaNH_2$ ——-liq.NH_3, Δ – $\rightarrow$?

    II. Pyridine + KNO_3 + con.H_2SO_4 —573K– $\rightarrow$?

    III. Thiophene + HCHO + HCl ——- $\rightarrow$?

    IV. Pyrrole + $CHCl_3$ + 3 NaOH ——- $\rightarrow$?

    V. Pyrrole —— Zn/AcOH—- $\rightarrow$?
24. Write short notes on the following.

    (i) Fluorescence (ii) Phosphorescence

    (iii) Chemiluminescence (iv) Photosynthesis.

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