

सत्रीय कार्य / Assignment Work – 2014-15

M.Sc. Chemistry (Final)

Max Marks – 30

Min Marks-12

निर्देश : सत्रीय कार्य के प्रत्येक विषय में कुल 30 अंक हैं। सभी प्रश्नों के अंक समान होंगे। सभी प्रश्न हल कीजिए। (Assignment Work of each paper carries 30 Marks. All questions carry equal marks. Attempt all questions.)

Paper - I (Nuclear and Radiochemistry)

1. Calculate the mean binding energy of (a) 4He and (b) 16O atoms, given the masses: $\text{H} = 1.0078\text{ u}$, $n = 1.0087\text{ u}$, $4\text{He} = 4.0026\text{ u}$ and $16\text{O} = 15.9949\text{ u}$.
2. Derive the expression for magnetic dipole moment of a charged particle.
3. Write short notes on: (i) Isobars; (ii) Double Beta decay; and (iii) Nuclear Magnetic Resonance.
4. In the fission of $^{239}\text{Pu}_{94}$ the fragments have the mass numbers 100 and 138, whose stable isobars are $^{100}\text{Mo}_{42}$ and $^{138}\text{Ba}_{56}$; what are the primary fragments?
5. Write short notes on: (i) Nuclear Waste Management; (ii) Types of GM Counters.

Paper - II (Medicinal Chemistry)

1. Explain adverse effects of drugs.
2. Give an account on Drug Metabolism.
3. Write short notes on: (i) Soft Drugs; (ii) Bioavailability; and (iii) Mitotic Inhibitors.
4. Explain Antiarrhythmic agents in detail.
5. Write short notes on: (i) Dapsone; and (ii) Antifungal Drugs; (iii) Barbiturates; (iv) Synthesis of Penicillin G.

Paper - III (Analytical Chemistry II)

1. Write about sample decomposition and dissolution.
2. Explain precision in detail.
3. Write short notes on: (i) Autoradiography; (ii) Determinate Errors; (iii) Use of Radioisotopes.
4. Explain the types of Voltammetry.
5. Write short notes on: (i) Amplifier; (ii) Monochromators; and (iii) Manual Polarograph.

Paper - IV (Organic Chemistry)

1. Describe reactivity for aliphatic substrates and Hunsdiecker reaction.
2. Explain the mechanism of Catalytic hydrogenation.
3. Describe the mechanism of Claisen-Schmidt reaction and Benzoin condensation.
4. Describe E1 reaction.
5. Describe Cycloaddition reactions.

Paper - V (Chemistry of Natural Products)

1. How acetyl coenzyme-A is converted into biogenetic isoprene unit?
2. Prove that β -carotene has a symmetrical structure. Give the synthesis of β -carotene.
3. Write short notes on: (i) Bile Acids; and (ii) Synthesis of Progesterone; (iii) Nicotine Synthesis.
4. Discuss structural relationship between flavonol, anthocyanidin and catechin.
5. What are prostaglandins? Give their classification and biological significance.
