

**DEPARTMENT OF SCIENCES, III SEMESTER M.Sc (CHEMISTRY)  
END SEMESTER EXAMINATIONS, NOVEMBER 2018**

**BIOORGANIC AND MEDICINAL CHEMISTRY [CHM- 5014]  
(REVISED CREDIT SYSTEM-2017)**

Time: 3 Hours

Date: 24<sup>th</sup> Nov 2018

MAX. MARKS: 50

Note: (i) Answer **ALL** questions

(ii) Draw diagrams, and write equations wherever necessary

**1A. i)** Explain the Glucose Oxidase method and Benedict's test for the quantification of glucose in blood and urine respectively.

**ii)** Discuss the synthesis of paracetamol and aspirin. Mention a condition when paracetamol is advised to aspirin as an antipyretic analgesic.

**1B. i)** What are gold compounds? Give one example and its synthesis.

**ii)** Discuss substrate and enzyme strain theories of enzymatic action with appropriate sketches.

**1C.** Give any two drawbacks of narcotic analgesics? What are narcotic antagonists? Discuss the synthesis of Nalorphine.

**(6+2+2)**

**2A. i)** What is pyridoxal phosphate? Why is it called a versatile biochemical catalyst?

Explain its catalytic action in the racemization of alanine.

**ii)** Explain hydrotrophy and crystal engineering techniques for enhancing solubility of a drug.

**2B.** Differentiate between the following;

**i)** Cerebroside and ganglioside

**ii)** Metalloenzymes and metal-activated enzymes

**2C.** Discuss the Malloy and Evelyn method of determination of bilirubin in blood.

**(6+2+2)**

3A. i) Explain the mechanism of action of peptide hormones.

ii) Give any four functions of phospholipids.

3B. Discuss the structure of m-RNA with a neatly labelled diagram. What is its role in protein synthesis?

3C. Explain the effect of optical isomerism in drug action with ephedrine as an example.

(6+2+2)

4A. i) What is the fundamental principle of action of antihistamines? Discuss the synthesis of Diphenhydramine hydrochloride. What are the advantages of second generation antihistamines?

ii) What are aminoglycoside antibiotics? Give three advantages of chloramphenicol.

4B. List any two differences between the following;

i) Competitive and non-competitive inhibition

ii) B- and Z-forms of DNA

4C. Give reason for the following statements;

i) Isomerases do not exhibit stereo-specificity.

ii) Basal anesthetics are preferred to inhalation anesthetics in minor surgical procedures.

(6+2+2)

5A. i) Explain the synthesis of the following drugs;

a) Trimethadione

b) Methyldopa

ii) What is Lineweaver-Burk double reciprocal plot? Explain its significance.

5B. Define bio-isosterism. List the types of bio-isosteres and any four processes by which a drug molecule crosses the neutral barrier.

5C. Justify the following statements:

i) The drug phenytoin is intravenously administered as phenytoin sodium.

ii) Glycerol tripalmitate is a solid at room temperature.

(6+2+2)

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