Reg. No.	

Manipal

Manipal University

Department of Sciences

IV SEMESTER M.Sc. (CHEMISTRY),

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: BIOORGANIC AND MEDICINAL CHEMISTRY (CHM – 704) REVISED CREDIT SYSTEM

Time: 3 Hours

Date: 07-05-2016

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer any five full questions.
- ✤ Missing data may be suitably assumed.
- 1A. Explain the concepts of enzyme specificity with appropriate examples.
- 1B. Which are the three classes of antihistaminics? What are the main structural features of Phenothiazine derivative antihistamins? Discuss the synthesis of Mepyramine maleate.

1C. i) Explain extrinsic and intrinsic membrane systems. Discuss the structure of cerebrosides and gangliosides.

ii) What are the drawbacks of narcotic analgesics? Discuss the different types of narcotic analgesics and synthesis of diamorphine hydrochloride.

(3+3+4)

2A. Differentiate between the following with appropriate examples;

- i) Competitive & non-competitive inhibitors
- ii) Fibrous & globular proteins
- iii) Glycerophospholipids & sphingophospholipids

2B. Discuss the synthesis and use of Carbovir. Explain with example the application of PDT as anti-HIV drug.

2C. i) What are group-I hormones. Explain their mechanism.

ii) What are the cardinal features of antibiotics? Discuss the mechanism of action of Astemizole.

(3+3+4)

3A. What is suicide enzyme inhibition? Discuss the models behind the mechanism of enzymatic action.

3B. What are the advantages of NSAIDs over steroid anti-inflammatory agents? Explain the

synthesis of indomethacin.

3C. i) What is c-AMP? Explain why they are called as secondary messengers?

ii) Discuss the six major classes of enzymes with appropriate representative reactions they catalyze.

4A. Justify the following:

- i) ATP plays an important role in catabolism and anabolism processes.
- ii) Glomerular filtration rate is often measured on the basis of renal clearance of insulin.
- **4B.** What is partition coefficient in relevance to drugs? How is it measured?
- 4C. i) Explain the mechanism of biochemical reactions associated with PLP.
 - **ii**) Describe glucoronide conjugation.

(3+3+4)

(3+3+4)

- 5A. Describe the role of hydrogen bonding in relation to the biological activities of a drug.
- **5B.** Describe occupancy theory of drug action. Give two of its drawbacks.
- 5C. i) What is the principle behind the preservation of biological fluids?

ii) What are the reasons for preferring parentral route of drug administration in some cases?

(3+3+4)

6A. Describe the following:

- i) Biological membrane
- ii) Toxicokinetics
- iii) Energy values of food

6B. Explain the procedures for the estimation of the following:

- i) Glucose in blood
- ii) Haemoglobin in blood
- iii) Uric acid in urine

6C. i) What are soft drugs? Explain the difference between a drug and a prodrug.

ii) Discuss the roles of co-solvent and surfactants in improving the drug solubility.

(3+3+4)
