

**MANIPAL ACADEMY OF HIGHER EDUCATION****FIRST SEMESTER M.Sc. MEDICAL (ANATOMY, PHYSIOLOGY, BIOCHEMISTRY,  
PHARMACOLOGY, MICROBIOLOGY) DEGREE EXAMINATION – MARCH 2021****SUBJECT: BASIC SCIENCES – COMMON CORE 1 (MCC 601)**

Monday, March 22, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

- ✍ Answer Section “A”, Section “B” and Section “C” in THREE separate answer books.
- ✍ All questions are compulsory.
- ✍ Illustrate your answers with diagrams wherever appropriate.

**SECTION “A” (ANATOMY) : 20 MARKS**

1. Enumerate the parts of urinary system. Describe the kidney in detail. (10 marks)
2. Write short notes on:
  - 2A. Collateral circulation
  - 2B. Cartilaginous joints(5 marks × 2 = 10 marks)

**SECTION “B” (PHYSIOLOGY) : 15 MARKS**

- 1A. Draw a labelled diagram of reflex arc. Classify reflexes.
- 1B. Name the refractory errors of eye. (3+2 = 5 marks)
- 2A. Draw a labelled diagram of limb lead II ECG recording. Give the cause for each wave.
- 2B. Give the normal WBC count. Name different types of WBCs. (3+2 = 5 marks)
- 3A. Give the normal value of total plasma calcium level in blood. Name the hormones involved in calcium homeostasis.
- 3B. Name the primary and accessory muscles of inspiration. (3+2 = 5 marks)

**SECTION “C” (BIOCHEMISTRY) : 15 MARKS**

1. Describe the structure of immunoglobulins. Name the different classes of immunoglobulins and their functions.
2. What are enzymes? Describe the factors affecting the velocity of an enzyme catalyzed reaction.
3. Describe the functions and deficiency symptoms of vitamin D. (5 marks × 3 = 15 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**

**FIRST SEMESTER M.Sc. (MEDICAL BIOCHEMISTRY) DEGREE EXAMINATION – MARCH 2021**  
**SUBJECT: CARBOHYDRATES AND PROTEIN – CHEMISTRY AND METABOLISM (MBC 603)**

Tuesday, March 23, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Describe the catabolism of glucose in muscle during strenuous exercise. Add a note on its significance.

(8+2 = 10 marks)

2. Discuss urea cycle under following headings:

2A. What is the need of urea synthesis in our body?

2B. Describe the process of removal and transportation of ammonia from amino acids

2C. Urea cycle reactions.

(2+4+4 = 10 marks)

3. **Write a note on:**

3A. Explain denaturation with its biological applications.

(2+3 = 5 marks)

3B. Discuss muco-polysaccharides with its functions.

(5 marks)

3C. Describe the formation and fate of pyruvic acid in the body.

(5 marks)

3D. Classify acute phase proteins with their biological significance.

(5 marks)

3E. Define metabolomics. Mention its principle and applications.

(1+4 = 5 marks)

3F. Discuss the structure of haemoglobin. Add a note on its function as buffer.

(5 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION****FIRST SEMESTER M.Sc. (MEDICAL BIOCHEMISTRY) DEGREE EXAMINATION – MARCH 2021****SUBJECT: GENERAL TECHNIQUES AND ENZYMES (MBC 605)**

Wednesday, March 24, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ Answer ALL the questions.

✍ Long answer questions:

1. Explain the classification and nomenclature of enzymes. Give an account of various types of enzyme inhibitions.

(6+4 = 10 marks)

2. Describe eukaryotic cell and subcellular organelles. Enumerate the biochemical activities of different subcellular fractions and their respective marker enzymes.

(4+6 = 10 marks)

3. Write a note on:

3A. Outline the principle, procedure and applications of high performance liquid chromatography (HPLC)

3B. Sketch the components of spectrophotometer. Add a note on principle and its applications

3C. Outline the process of purification and characterization of proteins

3D. Discuss the principle and procedure of determination of pH. What are ion selective electrodes?

3E. What is ELISA? How does this technique differ from RIA? What are the applications of these two techniques?

3F. What are isotopes? Discuss the detection and applications of isotopes.

(5 marks × 6 = 30 marks)

