

MANIPAL ACADEMY OF HIGHER EDUCATION

**SECOND SEMESTER M.Sc. MEDICAL (ANATOMY, PHYSIOLOGY, BIOCHEMISTRY,
PHARMACOLOGY, MICROBIOLOGY) / M.Sc. FORENSIC SCIENCE DEGREE
EXAMINATION – SEPTEMBER 2021**

**SUBJECT: MCC 602 - COMMON CORE: INTRODUCTION TO RESEARCH
MFS 602 - COMMON CORE-2: RESEARCH METHODOLOGY**

Monday, September 13, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ Answer ALL the questions.

✍ Long answer questions:

1. Explain in detail the components of the research article.

(10 marks)

2A. What is the concept of Confidence Interval? Calculate the 95% confidence interval of the mean of a sample of size 10 with mean 20 and standard deviation 5.

2B. The weight of 200 students are normally distributed with mean 50 kg and standard deviation 5 kg. What percentage of students will have weight above 60 kg?

(Given: Cumulative area under Normal Curve $Z=2$ is 0.9772)

(10 marks)

3. Short Answer Questions:

3A. Find the Standard Deviation of the respiratory rate/ minute found to be 16, 18, 19, 17, 21, 24, 22, 23, 25, 28 in ten individuals.

3B. What is Probability sampling? Explain Systematic Sampling with its advantages and disadvantages.

3C. What is one-way ANOVA? Discuss its application with example.

3D. What is Experimental study design? Discuss role of Randomization in Experimental design.

3E. Assume a Population of 1000 people, of whom 300 have a disease and 700 do not have the disease. A screening Test is used to identify the 300 people with disease. Result of the screening Test is given below. Calculate Sensitivity, Specificity, PPV and NPV and comment on performance of screening Test.

Results of Screening	True Characteristic in the Population	
	Disease	No Disease
Positive	180	100
Negative	120	600
Total	300	700

3F. What is the role of informed consent in medical research?

(5 marks × 6 = 30 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION**SECOND SEMESTER M.Sc. (MEDICAL BIOCHEMISTRY) DEGREE EXAMINATION –
SEPTEMBER 2021****SUBJECT: MBC 604 - LIPIDS METABOLISM, ACID BASE BALANCE AND
BIOLOGICAL OXIDATION**

Tuesday, September 14, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ Answer ALL the questions.

✍ Long Answer Questions:

1. Give an account of beta oxidation of Palmitic acid under the headings:
Activation, transport reactions and energetics.

(1+2+5+2 = 10 marks)

2. Trace the generation of ATP from NADH by oxidative phosphorylation. Add a note on high energy compounds.

(10 marks)

3. Write a note on:

- 3A. Essential fatty acids
3B. Renal regulation of pH
3C. Active metabolism in fed state
3D. Prerequisites of denovo biosynthesis of fatty acid
3E. i) Bile salt ii) HMG CoA reductase
3F. Alkalosis

(5 marks × 6 = 30 marks)



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MANIPAL ACADEMY OF HIGHER EDUCATION
SECOND SEMESTER M.Sc. (MEDICAL BIOCHEMISTRY)
DEGREE EXAMINATION – SEPTEMBER 2021

**SUBJECT: MBC 606 - VITAMINS, MINERALS, NUTRITION, ENVIRONMENTAL &
FOOD POLLUTANTS**

Wednesday, September 15, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Discuss the chemistry, absorption, biochemical role and associated disorders of Vitamin B12-Add a note on folate trap.

(10 marks)

2. Discuss sources, RDA and metabolism of iron. Explain the associated disorders.

(10 marks)

3. **Write a note on:**

3A. Dietary fibres

3B. Protein energy malnutrition

3C. Reactive oxygen species

3D. Food additives and pollutants

3E. Functions of vitamin C

3F. Calcium homeostasis

(5 marks × 6 = 30 marks)

