



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS  
2019/2020 ACADEMIC YEAR  
THIRD YEAR SECOND SEMESTER**

**SCHOOL OF SCIENCE AND INFORMATION  
SCIENCES  
FOR THE DEGREE OF BACHELOR OF SCIENCE**

**COURSE CODE: BOT 4118  
COURSE TITLE: PLANT METABOLISM AND  
BIOCHEMISTRY**

**DATE: 10<sup>TH</sup> DECEMBER, 2019**

**TIME: 0830 - 1030HRS**

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**INSTRUCTIONS**

ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO IN SECTION B. ILLUSTRATE YOUR ANSWERS WITH SUITABLE DIAGRAMS AND GIVE EXAMPLES WHEREVER NECESSARY.

**SECTION A (30 marks) Answer ALL questions**

1. Explain the differences between amylose and amylopectin. **(3 marks)**
2. Define the following terms, and give an example of each: **(3 marks)**
  - a) Monosaccharide **(1.5 marks)**
  - b) Coenzyme **(1.5 marks)**
3. State the kinds of reactions the following classes of enzymes catalyze; **(3 marks)**
  - (a) Hydrolases **(1 mark)**
  - (b) Lyases **(1 mark)**
  - (c) Transferases **(1 mark)**
4. Describe briefly any THREE different levels of structure when describing proteins **(3 marks)**
5. Explain the mechanism of activation of fatty acids prior to catabolism **(3 marks)**
6. Describe briefly the chemical groups found in every amino acid. **(3 marks)**
7. Factors that Affect the Rate of Enzyme Reactions. **(3 marks)**
8. Explain the role of messenger RNA and ribosomes in protein synthesis **(3 marks)**
9. Illustrate the structural formula for glycerol and show how glycerol is involved in the formation of a lipid. **(3 marks)**

**SECTION B ANSWER ANY TWO QUESTIONS (40 MARKS)**

10. Discuss the distinct groups of secondary metabolites and their importance in plants. **(20 marks)**
11. Discuss nitrogen metabolism **(20 marks)**
12. Give an account of the process involved in beta oxidation of fatty acids. **(20 marks)**
13. Discuss the biosynthesis of nucleotides in plant cells **(20 marks)**

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