P2

TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN BIOCHEMISTRY

ABC 4306: PLANT BIOCHEMITRY II

END OF SEMESTER EXAMINATION

SERIES: JULY 2025

TIME: 2 HOURS

DATE: Pick Date JULY 2025

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

a) Identify the unsaturated fatty acids that are present in plant cell membranes (3 Marks)

b) Describe the sources of carbon for De novo fatty acids synthesis (4 Marks)

c) Differentiate between fatty acid synthase (FAS) and alpha-ketoacid elongation (α-KAE) pathways of elongation of fatty acids (4 Marks)

d) Compare and contrast the three condensing enzymes of fatty acid synthase (6 Marks)

e) Describe the function of four membrane-bound desaturases within the chloroplasts (4 Marks)

f) Describe the two isoforms of Acetyl-CoA carboxylase in de novo biosynthesis of fatty acids and the sites where they occur (5 Marks)

g) Describe the two fundamental differences of plant fatty acid synthesis in plants from all other eukaryotic organisms (4 Marks).

Question TWO

a) Describe the first and committed step in de novo fatty acids biosynthesis (10 Marks)

b) Describe the experiment that indicate the regulation of acetyl-CoA carboxylase during de novo fatty acid synthesis (10 Marks)

Question THREE

a) Describe the groups clustering of lipophilic molecules found in the phloem highlighting examples (10 Marks)

a) Describe the oxylipin biosynthetic pathways in plants (10 Marks)

Question FOUR

Describe the occurrence, **c**hemical composition and structure of suberin (20 Marks)

Question FIVE

Describe the fatty acids elongation and termination mechanisms in plants (20 Marks)