



Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF **PURE AND APPLIED SCIENCES**

DIPLOMA IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY
(DIMBT 10M)

ABT 2301 : VITAMINS & MINERALS

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: February 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this paper

- *Answer booklet*

This paper consists of **FIVE** questions.

Answer Question **ONE (compulsory)** and any other **TWO** questions

This paper consists of 3 PRINTED pages

Question ONE

- a) Define the following terms:
 - (i) Vitamins (2marks)
 - (ii) Coenzyme (2marks)
- b) (i) Give the structures of vitamin A alcohol (2marks)
 - (ii) State FOUR deficiency manifestations of vitamin A (4marks)
- c) (i) Name TWO main classes of vitamins and give two example sin each (4marks)
 - (ii) State FOUR differences in the two classes in (Ci). (4marks)
- d) Differentiate hyperclacemia from hypocalcemia (4marks)
- e) (i) Explain the biochemical function of iodine (2marks)
 - (ii) What disorder is associated with iodine metabolism (1mark)
 - (iii) Give TWO food sources of iodine (1mark)
- f) (i) Explain beneficial effects of β -carotene (2marks)
 - (ii) Explain deficiency associated with vitamin K. (2marks)

Question TWO

- a) Briefly explain Wernicke-Korsakioff syndrome (2marks)
- b) Explain action of calcitriol
 - (i) In intestine (3marks)
 - (ii) On bone (3marks)
 - (iii) On kidney (3marks)
- c) Give FOUR reasons why vitamin D is considered to be a hormone (4marks)

Question THREE

- a) For the following vitamins and minerals, name the deficiency diseases, briefly explain the symptoms and give two food sources.
 - (i) Vitamin D (3marks)
 - (ii) Vitamin C (3marks)
 - (iii) Iodine (3marks)
- b) Differentiate between wet beriberi and dry beriberi (6marks)

Question FOUR

- a) Describe the absorption of iron from consumed food. (4marks)
- b) What are the factors that affect absorptions of iron. (4marks)
- c) Give FOUR factors that contribute to iron deficiency anemia (4marks)
- d) Differentiate hemosiderosis and hemochromatosis. (3marks)

Question FIVE

- a) Which vitamins are associated with the following coenzyme

- (i) FAD (1mark)
- (ii) NADP (1mark)
- (iii) Coenzyme A (1mark)
- b) (i) What do you understand by Wilson's disease (2marks)
- (ii) What are the characteristics of Wilson's disease (4marks)
- (iii) Give the cause of Willsons disease (2marks)
- c) Differentiate between hyponatremia and hypernatremia. (4marks)