



# Technical University of Mombasa

Faculty of Applied and Health Sciences

**DEPARTMENT OF PURE AND APPLIED SCIENCES**

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF  
TECHNOLOGY IN APPLIED CHEMISTRY (ANALYTICAL OPTION)  
**BTAC 11M**

**ACH 4408: COSMETIC ANALYSIS**

SEMESTER EXAMINATION

DECEMBER 2013 SERIES

2 HOURS

Instructions to candidates:

This paper consist of **FIVE** questions

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

## QUESTION ONE

a) Explain the following terms;

- |                   |          |
|-------------------|----------|
| (i) Legislation   | (2marks) |
| (ii) Cosmetic     | (2marks) |
| (iii) Perfumes    | (2marks) |
| (iv) Antioxidants | (2marks) |

b) Define sunscreen products according to the following legislations.

- |                         |          |
|-------------------------|----------|
| (i) European Union (EU) | (2marks) |
| (ii) United states      | (2marks) |

c) Assume you are a quality control manager in a fast growing cosmetic manufacturing company. Give an example of a safety problem that had occurred in your company and how you dealt with it. (5marks)

- d) State any TWO organic acids used as preservatives. **(2marks)**
- e) Outline THREE factors to consider when choosing a technique for any cosmetic product analysis. **(3marks)**
- f) State the spectroscopic techniques used for the determination of the following. **(2marks)**
- (i) Zinc oxide
  - (ii) Titanium oxide
- g) List THREE types of organic pigments used in cosmetic formulation **(3marks)**
- h) State how the following countries consider whitening agents
- (a) EU **(1mark)**
  - (b) Japan **(1mark)**
  - (c) USA **(1mark)**

## QUESTION TWO

- a) List FIVE pieces of information a manufacturer should have about his/her product. **(5marks)**
- b) Differentiate between organic and inorganic UV fitters **(6marks)**
- c) Outline FIVE objectives of determining colouring agents in cosmetic products. **(5marks)**
- d) Outline FOUR cosmetic qualities that a foundation must fulfill. **(4marks)**

## QUESTION THREE

- a) Explain FOUR properties of analytical techniques used in cosmetic analysis. **(8marks)**
- b) Outline FIVE reasons for cosmetic analysis. **(5marks)**
- c) Explain the analysis of colouring agents in a lipstick sample using liquid chromatography (LC). **(7marks)**

## QUESTION FOUR

- a) Explain any TWO substances subject to be controlled by the authorities in cosmetic analysis. **(4marks)**
- b) Describe TWO types of tanning products **(4marks)**
- c) Explain the THREE outcomes resulting from the determination of toxicological end point while using alternative methods to animal testing. **(6marks)**
- d) Explain the analysis of anionic surfactants in toothpaste samples. **(6marks)**

## QUESTION FIVE

- a) Explain TWO concentration levels of preservatives as used in the study of cosmetics. **(4marks)**
- b) Explain the mechanism of dihydroxyacetone (DHA) in the sunless tanning products **(4marks)**
- c) Explain the analysis of the active ingredients in the whitening agents **(7marks)**
- d) Outline FIVE key features of the in –market control system. **(5marks)**