



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ANALYTICAL CHEMISTRY

ACH2303 : VACUUM AND GLASS BLOWING TECHNOLOGY

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

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) State: (i) The purpose of annealing all glass objects immediately after their manufacture. (1mark)
- (ii) FOUR properties of glass that make it have very many uses. (8marks)
- (b) Describe TWO operations that are involved in glass annealing process. (5marks)
- (c) State FOUR properties of the following type of glasses: (i) Borosilicate . (ii) Lead. (8marks)
- (d) State and describe any TWO types of vacuums. (8marks)

Question TWO

(a) State the use of the following compounds used in glass making process.

- (i) Al_2O_3 (ii) Salt cake. (7marks)

(b) Name the oxide that impart the following color in glass products.

(i) Green tinted. (ii) Blue tinted. (iii) Bronze tinted. (iv) Grey tinted. (5marks)

(c) Define glassblowing. (2marks)

(d) State the units of vacuum (1mark)

Question THREE

(a) State the uses of each of the following raw materials used in glass making.

(i) Borax. (ii) Al_2O_3 . (iii) $NaNO_3$. (iv) $BaSO_4$ (10marks)

(b) State any FIVE finishing operations that are done on newly made glass products. (5marks)

QUESTION FOUR

(a) A typical vacuum furnace has three electronic gauge heads that monitors vacuum level at specific positions. State the functions of those gauge heads. (4marks).

(b)(i) Define vacuum technology. (1marks)

(ii) Explain FOUR reasons for carrying out vacuum technology in a vacuum. (10marks)

Question FIVE

(a) Define (i) Glass. (4marks)

(ii) Perfect vacuum. (2marks)

(b) State the source of the following compounds used in glass making .

(i) CaO (ii) Na_2O (iii) MgO (iv) Al_2O_3 (4marks)

(c) State the major difference between light bulb manufacture and bottle manufacture. (5marks)