BINDURA UNIVERSITY OF SCIENCE EDUCATION

CHEMISTRY DEPARTMENT

BACHELOR OF SCIENCE IN CHEMICAL TECHNOLOGY PART (II)

CH206: QUALITY MANAGEMENT SYSTEMS

2 HOURS

ANSWER QUESTION 1 AND FOUR (4) OTHER QUESTIONS TWO (2) FROM EACH OF THE SECTIONS "A" AND "B". EACH QUESTION CARRIES 20 MARKS

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1 (a) Define
(i) Proficiency testing
(ii) Standard uncertainty, $u_{(xi)}$ [2×2 marks]

(b) State six uses of Pareto diagrams [6 marks]

(c) The life cycle of customers can be defined in five stages. outline the stages and what each stage entails. [10 marks]

SECTION A : ANSWER TWO QUESTIONS FROM THIS SECTION

2. There are attributes that are associated with the value-based approach. These attributes are generally associated with Garvin (1984). Describe any five of these attributes. [20 marks]

3. (a) Discuss term quality management and the activities associated with it. [10 marks]

(b) Describe any five Ohno sources of waste. [10 marks]

4. (a) Describe the eight key principles have been included in the ISO 9000:2000. [16 marks]

(b) Explain any two benefits of Six sigma that are associated with Total Quality Management (TQM). [4 mark]

SECTION A : ANSWER TWO QUESTIONS FROM THIS SECTION

5. (a) Clearly distinguish between reference standard, working standard and traveling standard. [6 marks]

(b) Traceability determination in chemical measurements is associated with many difficulties resulting from the need for sample preparation before the measurement process itself. State the difficulties. [6 marks]

(c) Describe four main sources of uncertainty during sample analysis with an appropriate method. [8 marks]

6. (a) Decribe the four sources of uncertainty due to the calibration step that can influence the standard uncertainty of a single measurement $u_{(xsmpl)}$. [8 marks]

(b) Outline the classification of reference materials suitable for chemical investigations. [12 marks]

7. (a) Before commencing validation one should determine the basic features of an analytical method. Give any ten of these features. [10 marks]

(b) Distinguish between Instrumental detection limit (IDL) and Limit of quantitation (LOQ). [4 marks]

(c) Calculations based on standard deviations of signals and slope of calibration curve can be used to determine LOD. Give requirements, advantages and disadvantages of the method. [6 marks]

END OF PAPER