

FACULTY OF APPLIED SCIENCES SBB 2211/02
BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS
DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY
THEORY: PRINCIPLES OF QUALITY ASSURANCE SBB 2211

APRIL/MAY 2002
2^{1/2} Hours (100 marks)

INSTRUCTIONS

Answer **FOUR** Questions. Each question carries 25 marks. Where a question contains subdivisions, the mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large, clearly labelled diagrams.

1. (a) Describe briefly how Subjective standards differ from standards defined by variables or gauged attributes. (7)
- (b) Give an example of a subjective standard and describe how the subjective nature of your example would be controlled. (8)
- (c) Distinguish between:
 - (i) precision and accuracy in instruments (5)
 - (ii) Type1 error and Type11 error encountered in sampling (5)

2. (a) Define lot by lot acceptance sampling by attributes. (Illustrate your answer). (9)
- (b) Give situations where lot by lot acceptance sampling can most likely be used. (5)
- (c) Give advantages and disadvantages of acceptance sampling when compared with 100% inspection. (5)
- (d) Explain , with examples, acceptable quality level (AQL) and rejectable quality level (RQL) indices used as a measure of stringentness of sampling plans. (6)

FOR USE ONLY

3. Explain the concept of Hazard Analysis Critical Control Points (HACCP). In your outline, include the principles of HACCP, the Decision tree and the stages of HACCP.
4. (a) What do you understand by the term 'Statistical Quality Control' when referring to a process? (7)
- (b) (i) The table below represents sample measurements in a process. Analyse the data and indicate whether the process is in control. (10)
- (ii) Using two standard deviations for your lower and upper control limits, what effect does it have on your previous answer? (3)
- (iii) Give five assignable or non-random causes of variation that affect the stability of a process. (5)

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
X ₁	20.23	20.19	20.00	19.98	20.03	20.04	20.26	20.00	20.03	21.22
X ₂	20.01	20.19	20.18	20.01	20.18	20.04	20.08	20.02	20.19	20.91
X ₃	20.20	20.22	20.20	20.03	20.02	20.03	20.10	20.04	20.01	20.03
X ₄	20.18	20.02	20.19	20.19	20.20	20.01	20.19	20.20	20.02	20.67

5. Describe the process of new product development
6. Explain the term "Good manufacturing practice".