# Cork Institute of Technology

Higher Certificate in Science in Applied Biology – Stage 2

(National Certificate in Science in Applied Biology – Stage 2)

(NFQ-Level 6)

Autumn 2005

## QUALITY CONTROL

(Time: 3 Hours)

Answer FIVE questions. Attempt THREE from Section A (**Question 1 is compulsory**) and TWO from Section B

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## Section A

1. "The goal of improving factory production is not only a function of quality improvement, there are also considerations for efficiency, conservation of materials, energy saving costs, safety, hours of labour costs, etc. Whatever the situation, if the question is improvement, quality control charts/graphs can be drawn up and applied".

   Discuss this statement in relation to the application of control charts to quality control. NOTE: In your answer, diagrams and examples must be included.

   [20 marks]

2 (a). The table below shows the number of hours spent by workers on each task in a warehouse. Data was taken before and after a quality control standard operating procedure (QC SOP) was implemented by the quality control manager.

   Draw a Pareto diagram to illustrate the data collected. [14 marks]

| Category | Frequency before QC SOP | Frequency after QC SOP |
|---|---|---|
| Inventory taking | 100 | 180 |
| Tending warehouse | 200 | 80 |
| Dispatching | 410 | 350 |
| Status Report | 150 | 170 |
| Receival | 525 | 150 |
| Dead Stock Disposal | 80 | 45 |
| Inspection | 220 | 210 |

2 (b). Comment on the Pareto Diagram drawn. Did the implemented quality control standard operating procedure reduce the number of man-hours spend by workers doing each task, discuss?. [6 marks]

3. (a) Explain in detail, (i) the purpose of collecting data from a process or activity, (ii) deciding on the most appropriate means of data collection and (iii) the best ways of presenting the data collected. [12 marks]

(b). Discuss the role of sampling in quality control, explain how to obtain a sample size that is representative of the bulk of the material produced, explain also why population sampling is of critical importance in a laboratory or an industrial setting.

[8 marks]

4. Analytical data is produced daily by biologists and chemists in testing laboratories in the food, pharmaceutical and environmental industries. How can we ensure the quality of scientific data produced by scientists today using methodologies ranging from simple rapid ELISA testing kit to advanced instrumentation techniques in the testing of a range of production samples. [20 marks]

## SECTION B

5. Write short notes on **TWO** of the following:

(a) Quality Costs

(b) Quality Plans

(c) Training

(d) Operator control (20 marks)

6. Discuss the importance of a quality audit as an essential element in a quality control system under the following headings:

(a) Type and depth of an audit (6 marks)

(b) The audit plan (6 marks)

(c) Performance of an audit (8 marks)

7. A quality circle is an example of a motivational technique in quality control.

(a) Outline the principle of a quality circle (10 marks)

(b) Describe the components and operation of a typical quality circle (10 marks)