NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF APPLIED CHEMISTRY
BACHELOR OF SCIENCE HONOURS DEGREE
SUPPLEMENTARY EXAMINATIONS – AUGUST 2013
QUALITY ASSURANCE MANAGEMENT AND CONTROL – SCH 2211
TIME: 3 HOURS

Instructions to candidates

Answer **All** Questions from Section A and **any three (3)** from Section B. Section A carries forty (40) marks and each question in Section B carries twenty (20) marks. Start your answers to each question on a new page. This paper comprises 4 printed pages plus one page as attachment.

SECTION A [Answer All Questions from this Section. This Section carries forty (40) marks].

Study the attached case and answer all the questions that follow.

1. (a) Analyze Bigolov's dilemma. (10 marks)

   b) Why is Bigolov scared of ISO 9000 implementation? (6 marks)

   c) In which ways would ISO 9000 ensure that a firm supplies goods and services of world class standard? (8 marks)

   d) Identify principles and/or practices that distinguish ISO 9000 with TQM. (6 marks)

   e) Suggest how Advanced Laser Technology should proceed with their ISO 9000 implementation. (10 marks)

SECTION B [Answer any three (3) questions from this Section. Each question carries twenty (20) marks].

2. a) Mistake-Proof This:

   The far-sighted instructor in a rush to get to work on time often forgot and left his glasses at home.

Propose a change that will ensure the instructor does not forget his glasses. (6 marks)

b) Explain the five steps of benchmarking. (10 marks)

c) What are the Crosby's absolutes of Quality? (4 marks)

3. You have been appointed project manager for TQM. One of the main functions of TQM project manager is to develop a detailed TQM implementation plan, process improvement and value to the organization. Explain how you will be instrumental in the company achieving, perpetuating and institutionalizing TQM. (20 marks)

4. a) Explain the concept of six sigma. (5 marks)

b) What do you understand by "Quality is free"? (5 marks)

c) How can PDCA be implemented at your university? (10 marks)

5. The following is data of pH for a solution in a mixing tank.

a)

SAMPLE	***1***	***2***	***3***	***4***	***5***
1	**5.02**	**5.01**	**4.94**	**4.99**	**4.96**
2	**5.01**	**5.03**	**5.07**	**4.95**	**4.96**
3	**4.99**	**5.00**	**4.93**	**4.92**	**4.99**
4	**5.03**	**4.91**	**5.01**	**4.98**	**4.89**
5	**4.95**	**4.92**	**5.03**	**5.05**	**5.01**
6	**4.97**	**5.06**	**5.06**	**4.96**	**5.03**
7	**5.05**	**5.01**	**5.10**	**4.96**	**4.99**
8	**5.09**	**5.10**	**5.00**	**4.99**	**5.08**
9	**5.14**	**5.10**	**4.99**	**5.08**	**5.09**
10	**5.01**	**4.98**	**5.08**	**5.07**	**4.99**

Use the variable control charts to determine whether the process is under control (11 marks)

b) Three ice cream packing machines at the Creamy Treat Company are being evaluated for their capability. The following data are recorded:
Packing Machine Standard Deviation
A .2
B .3
C .05

If specifications are set between 15.8 and 16.2 ounces, determine which of the machines are capable of producing within specifications. (5 marks)

c) Draw two graphs one showing process capable of always meeting design specifications and the other showing process meeting capability some of the times. (4 marks)

……THE END……

The case

Advanced Laser Technology, Inc.

Attached

Determining Control Limits for *x*-bar and *R*-Charts

SAMPLE SIZE n	FACTOR FOR $\bar{x}$-CHART A_2	FACTORS FOR R-CHART D_3	D_4
2	1.88	0.00	3.27
3	1.02	0.00	2.57
4	0.73	0.00	2.28
5	0.58	0.00	2.11
6	0.48	0.00	2.00
7	0.42	0.08	1.92
8	0.37	0.14	1.86
9	0.44	0.18	1.82
10	0.11	0.22	1.78
11	0.99	0.26	1.74
12	0.77	0.28	1.72
13	0.55	0.31	1.69
14	0.44	0.33	1.67
15	0.22	0.35	1.65
16	0.11	0.36	1.64
17	0.00	0.38	1.62
18	0.99	0.39	1.61
19	0.99	0.40	1.61
20	0.88	0.41	1.59