

Silence Please

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CIT Semester 1 Examinations 2018/19

Note to Candidates:	Check the <u>Programme Title</u> and the <u>Module Description</u> to ensure that you have received the correct examination. If in doubt please contact an Invigilator.		
Module Title:	Lean Manufacturing		
Module Code:	STAT6008		
Programme Title(s):	HC Good Manuf Practice FT Y2 Dip Biopharma Manuf Operations HC Good Manuf Practice ACCS Y2 HC Good Manuf Practice ACCS Y3 Lean Manufacturing		
Block Code(s):	SGMPR_6_Y2	EBPMO_7_Y1	SGMFP_6_Y2
	SGMFP_6_Y3	EPEXXA6_Y0	
External Examiner(s):	Mr. Liam Cotter, Dr. Noel Mulligan		
Internal Examiner(s):	Mr. Cilian Ó Súilleabháin		
Instructions:	Answer 2 Questions		
Duration:	2 Hours		
Required Items:	Calculator, Log/Formulae Tables		

- Q1. a) Explain the importance of benchmarking. Illustrate your answer using examples from the chemical industry. (20 marks)
- b) Discuss the merits of internal quality audits versus external quality audits. (20 marks)
- c) Compare the merits of quality audits versus benchmarking. (10 marks)
- Q2. a) (i) Explain the benefits of empowerment of workers. (12 marks)
- (ii) Outline how a manager could go about empowering their subordinates and explain the benefits of the approach you have outlined. (13 marks)
- b) Discuss what is meant by the term “assertiveness”. Give an example of an assertiveness technique: explain why the technique is effective. (15 marks)
- c) Discuss the effect of assertiveness and empowerment in relation to achieving quality standards. (10 marks)
- Q3 a) Outline the effects of globalisation for businesses. Explain the key factors that give countries a competitive advantage. (25 marks)
- b) Explain the term “Process Analytical Technology”. Illustrate your answer with an example of where Process Analytical Technology would be of benefit in a chemical factory or alternatively where it would be of benefit in a biomedical factory. (15 marks)
- c) Explain the differences between the words “compliance” and “effectiveness”. Illustrate with practical examples. (10 marks)

Statistical Formulae and data:

$$\sigma = \sqrt{V} = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{(n-1)}}$$

$$\text{Slope} = m = \frac{S(xy)}{S(xx)}$$

$$R = \frac{S(xy)}{\sqrt{S(xx)S(yy)}}$$

$$C_P = \frac{USL - LSL}{6\sigma}$$

$$C_{PU} = \frac{USL - \bar{x}}{3\sigma}$$

$$C_{PL} = \frac{\bar{x} - LSL}{3\sigma}$$

$$C_{PK} = \min(C_{PU}, C_{PL})$$

Standard Deviations	Area in single tail
σ	%
1.0	15.87
2.0	2.275
3.0	0.135
4.0	0.003 2
5.0	0.000 028 67
6.0	0.000 000 10