Examination Period 3: 2017/18

ENG300518N

Module Title: Lean Manufacturing and Quality Applications
Level: Six
Time Allowed: Two hours

Instructions to students:

- Enter your student number **not** your name on all answer books.
- Answer **four** out of **six** questions. You will only be marked on the four questions answered.
- All questions are equally weighted. Where a question has more than one part, the division of marks is clearly stated.
- Begin each question on a separate page; label each page clearly with the number of the question you are answering.
- Neither books nor notes can be taken into the examination.
- The use of an electronic calculator of an approved type is permitted.
- Students will be provided with a Standardised Work Combination Table.

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Answer four out of six questions.

Question 1

Supply Chain and JIT

a. Describe fully how the supply chain works within 1 (one) from the following:

- Automotive
- Aerospace
- Food Industry
- Public Services

Explain briefly why your chosen sector has decided to follow the continuous improvement path, and state clearly the benefits / disadvantages. Also show a clear understanding of Just In Time (JIT).

(15 marks)

b. Draw a simple process map for a process (e.g. making a cup of tea). Identify areas for improvement from the aspect of waste.

Your process map should be a visual system that identifies the wastes within the process, each step should be broken down to an amount of time. You must produce a current state and future state map that would show improvements, such as reduction in walking. You should also identify value added and non-value added.

(10 marks)

Total: 25 marks

Question 2

Kaizen / Kanban Systems

a. Consider a Kaizen system within the Manufacturing Sector. Prepare a small report to management explaining the meaning of Kaizen.

Include in your answer explanations of what Kaizen means, where the technique was initially devised and then developed, and by whom.

Following on from your report explain your strategy for implementing the Kaizen system and identify what other quality tools could help in making improvements to quality.

(10 marks)

Question 2 continues overleaf
b. Give a full and detailed explanation of value and non-value added in relation to a product or service. State a minimum of two examples of consumer related products that have experienced problems in 2017/18 and how the company addressed the concerns of the consumer.

(10 marks)

c. Describe a Kanban system that improves the reduction of inventory of essential items such as nuts, bolts. Also show an understanding of a FIFO system.

(5 marks)

Total: 25 marks

Question 3
Poke Yoke / KPI’s

a. Explain what Poke Yoke is and its importance.

(5 marks)

b. Sketch a design for a simple Poke Yoke system that could be to improve QCD.

(5 marks)

c. There are seven DTI KPI measures that can be used to take specific measurements to achieve World Class Manufacturing, list them all and give a brief description of them.

(10 marks)

d. Explain the importance of continuous improvement.

(5 marks)

Total: 25 marks

Question 4
5S/C

a. Present a logical argument for its use by identifying the five areas that this technique concentrates on. Identify in the correct sequence all five steps. Give a visual sketch example showing before and after 5s/c.

(15 marks)

b. Describe the Audit Process for 5s/c and include a diagram of the lean temple, identify all the pillars.

(10 marks)

Total: 25 marks
Question 5

Visual Management

Visual Management needs no interpretation in the workplace, an environment where things are obvious from the minute you walk into an area.

You have been asked to introduce a visual management system for a process.

a. Suggest and identify a minimum of eight visual management systems that would improve QCD. Refer to examples seen during both flipped learning and lectures.

   (15 marks)

b. Consider the importance of visual management, choose one good example from the ones identified in part a and fully explain it. Consider reasons why it’s good or not good and suggest a possible alternative method of visually showing the same.

   E.g. Digital car dash displaying mph, compared to a clock version where the needle/pointer moves to align with a number or value.

   (10 marks)

Total: 25 marks

Question 6

Team working / PDCA

Team working is an important aspect within Manufacturing.

a. Identify the types of behaviour present and traits of individuals.

   (15 marks)

b. Describe the origins of the Deming Cycle and give an example of it relating it to QCD.

   (10 marks)

Total: 25 marks

End of Paper