

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 5

LEFEL 5

**EXAMINATION PERIOD
MAY 2019**

**CYFNOD ARHOLIADAU
2019**

**MODULE CODE:
M5X02199**

INDUSTRIAL PLACEMENT AND TEAM MANAGEMENT

TIME: 2 HOURS

ALL CANDIDATES TO ANSWER THREE OUT OF FOUR QUESTIONS

*Equipment or materials required – Calculators may be used
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Question 1

Down to Earth is an innovative energy company that produce specialist light sensors. The firm has fixed costs of £500,000 per annum. Variable costs are £7 per unit and the firm can produce 60,000 units per annum. The finished product sells for £20 per unit.

- a) Calculate the break-even point. (4 marks)
- b) Draw a break-even chart showing the company's current position. (5 marks)
- c) Calculate the margin of safety at 45,000 units. (4 marks)
- d) Calculate the profit if annual output falls to 75%. (7 marks)
- e) Discuss the limitations of using break-even analysis. (5 marks)

Question 2

Sketty Sports Cars currently produce vehicles for the UK sports 2000 regulations. Recent technical changes in the regulations allow for the use of external carbon fiber body work panels.

The team have decided to produce the panels in house and are obtaining quotes for an Autoclave (a large pressure cooker for curing panels in their moulds). In order to compare competitive quotations from different potential suppliers from different countries, Sketty Sportscars require a Request For Quotation (RFQ) document.

- a) Generate an RFQ for the autoclave. Briefly explain the reasoning behind the inclusion of each of your criteria. (12 marks)

Sketty Sports Cars are concerned about the initial purchase price and operating costs for the autoclave.

- b) Explain the concept of life cycle costing. (3 marks)
- c) Critically evaluate the factors that should be considered to generate a life cycle cost for the Autoclave. (10 marks)

Question 3

Explain the concept of Total Quality Management

(5 marks)

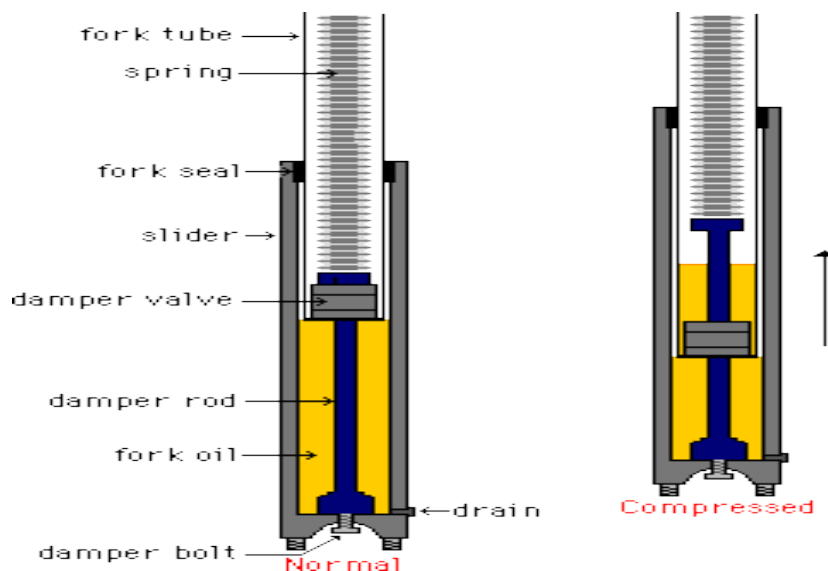
Outline a total Quality Management Strategy. Refer to Juran's 10 steps.

(6 marks)

What are the potential effects of not having a robust engineering quality system?

(3 marks)

Many engineering organizations utilize Fault Reporting And Corrective Action Systems (FRACAS). Imagine that you are working for a volume motorcycle engineering manufacturer. It has been reported that some telescope damper fork seals are leaking regularly on a recently released motorcycle. (see below)



You have been asked to identify any possible causes of this failure. Create an Ishikawa (herring bone) diagram of possible causes. Explain significant design error potential causes that may require more detail investigation. Use diagrams as required.

(11 marks)

Question 4



The City and County of Swansea wish to improve their public transport network. They are considering adopting a test fleet of ‘hybrid diesel electric buses’.

- i) Briefly discuss possible reasons for the City and County of Swansea to consider this change.

(4 marks)

- ii) Perform a PEST/STEP analysis on impact to the city bus operators running (or potentially running) hybrid buses on their fleet..

(16 marks)

- iii) Following the results of your analysis; what advice would you offer the city and county of Swansea and the bus operators on the potential adoption of some Hybrid buses.

(5 marks)