Design & Technology
A-Level

Modelling the costing of projects to achieve optimum outcome
Multiple Choice

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- Use a cross in the box to mark you answer ☒

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don’t spend too much time on one question

Good luck!

Q1. A smoke alarm needs either four 1.5 volt alkaline batteries or five 1.2 volt re-chargeable batteries to work.

Complete Table 1 to show the total costs to the customer of five battery changes or five re-charges.

This information will be used to decide a suitable way to power the device **(2 marks)**

	Alkaline batteries	Re-chargeable batteries
Cost of batteries and charger if required	£2.45 for 4 batteries	£17.00 for 5 batteries and a charger
Cost per re-charge of 5 batteries	£0	£0.03 for 5 batteries to be re-charged
Cost to customer after 5 battery changes or 5 re-charges		

Q2. Explain two advantages in terms of cost of using an automated closed loop control system, compared to an open loop control system, in production.
(2 marks)

1.

2.

Q3. Evaluate the cost implications to a business of running effective quality control systems. **(6 marks)**

Q4. When planning for production there are areas that need to be considered such as the equipment available for scale of production. Name 2 other areas that need to be considered **(2 marks)**

1.

2.

Q5. Name 3 costs that need to be considered when modelling the cost of a project **(3 marks)**

1. _____

2. _____

3. _____

Answers

Q1.

	Alkaline batteries	Re-chargeable batteries
Cost of batteries and charger if required	£2.45 for 4 batteries	£17.00 for 5 batteries and a charger
Cost per re-charge of 5 batteries	£0	£0.03 for 5 batteries to be re-charged
Cost to customer after 5 battery changes or 5 re-charges	£ 2.45 x 5 = £12.25	£17.00 plus £0.03 x 5 = £17.15

Award 1 mark for £12.25
Award 1 mark for correct answer £17.15

Q2.

- Reduced labour/wages costs
- Increased/faster productivity/cost saving

Q3.

Any six of the following but must include one from each to gain full marks:

Negatives

1. Running QC systems costs extra money /reduces profits. (1)
2. Increases selling price / price themselves out of the market / competitor products are cheaper. (1)
3. Set up costs eg. Equipment / training costs. (1)
4. Running costs eg. Labour/ energy /maintenance/ destructive testing/ etc. (1)
5. Slower production rate / time consuming / time needed to check every component / less products manufactured / sold. (1)

Positives

6. High quality / more reliable products produced. (1)
7. Good reputation/quality marks gained (BSI, ISO4000, etc). (1)
8. Leading to increased profits /higher value product / increased sales / money saved. (1)
9. Less returned products/ replacement products supplied. (1)
10. Sampling / computer driven /automated monitoring systems are cheaper to run.(1)
11. Increased QC checks will reduce the waste incurred when faulty goods are further processed/ faulty goods are disposed of / leads to increased productivity. (1)

Accept points stated in reverse, but do not award each twice eg increased sales due to high quality reputation / reduced sales due to poor quality reputation (1)
(6 x 1)

Q4.

- Material costs (quality of product)
- Labour/Wages (automation vs high skilled)
- Premises

Do not accept Equipment available for scale of production

Q5.

- Start-up costs (legal/insurance/stock/advertising/permits/wages)
- Sales (predict sales)
- Expenses (wages/advertising/vehicles/accounting/legal fees)
- Cost of goods (COGS) (materials/packaging/transport/commission)
- Cash flow (tell you how much cash your expecting/help make decisions)