BUS.OP4 Quality control and quality assurance

AQA 8132 · Calculator allowed · about 55 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions in the spaces provided. Show your working for any calculation: method marks are available even if your final answer is wrong. Ashgrove Bakery, used throughout this pack, is a fictional business.

1 Which one of the following best describes quality control?

- ☐ A) Checking a finished product or a sample of output, often at the end of production, to find and remove faulty items
- ☐ B) Advertising a product's quality to customers
- ☐ C) Setting the price a product will be sold for
- ☐ D) Training new staff on how to use the till

(Total for Question 1 is 1 mark)

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2 Which one of the following best describes quality assurance?

- ☐ A) Checking only the very last finished item before it is sold
- ☐ B) A system of checks built into every stage of production, aiming to prevent faults from happening in the first place
- ☐ C) A guarantee that a product will never break
- ☐ D) A method of setting staff wages

(Total for Question 2 is 1 mark)

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3 Explain the key difference between quality control and quality assurance.

(Total for Question 3 is 3 marks)

4 Ashgrove Bakery currently relies on a final quality-control check: a member of staff inspects loaves at the end of the process. In one 800-loaf batch, 3% are found faulty and thrown away. Each loaf costs 1.10 pounds in ingredients and labour to make.

(a) Calculate how many loaves in this batch are found faulty at the final quality-control check. **(2)**

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(b) Using your answer to part a, calculate the cost of this wasted batch of faulty loaves. **(2)**

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(Total for Question 4 is 4 marks)

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5 Ashgrove is considering a quality assurance approach instead, in which every stage of the baking process is checked, reducing the fault rate to 0.5% on the same size of batch.

(a) Calculate how many faulty loaves an 800-loaf batch would produce at this 0.5% fault rate. **(2)**

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(b) Using your answer to part a, calculate the cost of this wastage under the quality assurance approach. **(2)**

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(Total for Question 5 is 4 marks)

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6 Using your answers to questions 4b and 5b, calculate the saving per 800-loaf batch from moving to the quality assurance approach. Show your working.

(Total for Question 6 is 2 marks)

7 Using the fault-rate figures from questions 4 and 5, explain why a quality assurance approach might result in less wasted stock than relying on end-of-line quality control alone.

(Total for Question 7 is 3 marks)

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8 Introducing quality assurance requires a one-off staff-training programme costing 330 pounds. Using your answer to question 6, calculate how many 800-loaf batches it would take for the saving to cover this training cost. Show your working.

(Total for Question 8 is 2 marks)

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9 Explain one drawback to Ashgrove of relying only on end-of-line quality control.

(Total for Question 9 is 3 marks)

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10 Explain one drawback to Ashgrove of introducing a full quality assurance approach.

(Total for Question 10 is 3 marks)

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11 State two members of staff who might be responsible for checking quality under a quality assurance approach in a bakery.

(Total for Question 11 is 2 marks)

12 Explain one reason maintaining consistent quality matters for a brand like Ashgrove Bakery.

(Total for Question 12 is 3 marks)

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13 State two methods Ashgrove Bakery could use to check the quality of its loaves.

(Total for Question 13 is 2 marks)

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14 Ashgrove runs 5 batches of 800 loaves a week, for 48 weeks a year. Using your answer to question 6, calculate the total annual saving if Ashgrove switches every batch to the quality assurance approach. Show your working.

(Total for Question 14 is 2 marks)

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15 The 330 pound quality assurance training programme (question 8) pays for itself within 15 batches, and would then go on to save Ashgrove an estimated 5,280 pounds a year (question 14). However, question 10 shows that quality assurance has its own costs and can temporarily slow production.

Recommend whether Ashgrove Bakery should invest in the 330 pound quality assurance training programme rather than continue relying only on its current end-of-line quality control. Justify your answer using the figures and points made earlier in this pack.

(Total for Question 15 is 9 marks)

Mark scheme · BUS.OP4 Quality control and quality assurance

Question 1

- **B1** A cao
- **Answer: A**

Question 2

- **B1** B cao
- **Answer: B**

Question 3

- **B1** identifies that quality control mainly checks the finished product or output, often at the end of the process, to find faults that have already happened
- **B1** identifies that quality assurance builds quality checks into every stage of the process, with all staff responsible, aiming to prevent faults happening at all
- **B1** draws a clear contrast between the two, e.g. quality control detects problems after they occur, while quality assurance tries to stop them occurring in the first place
- **Answer: Quality control mainly checks the finished output, often at the end, to catch faults that have already happened, whereas quality assurance builds checks into every stage of the process, with every worker responsible, aiming to prevent faults from occurring at all.**

Question 4

- (a) **M1** 800 x 0.03 seen
- (a) **A1** 24 loaves cao
- **(a) Answer: 24 loaves.**
- (b) **M1** 24 x 1.10 seen (ft from part a)
- (b) **A1** 26.40 pounds cao
- **(b) Answer: 26.40 pounds.**

Question 5

- (a) **M1** 800 x 0.005 seen
- (a) **A1** 4 loaves cao
- **(a) Answer: 4 loaves.**
- (b) **M1** 4 x 1.10 seen (ft from part a)
- (b) **A1** 4.40 pounds cao
- **(b) Answer: 4.40 pounds.**

Question 6

- **M1** 26.40 - 4.40 seen (ft from questions 4b and 5b)
- **A1** 22.00 pounds cao
- **Answer: 22.00 pounds.**

Question 7

- **B1** identifies the point, e.g. quality assurance checks quality at every stage of baking, not just at the very end
- **B1** develops the point, e.g. this means problems (such as the wrong ingredient quantity or oven temperature) are more likely to be caught and corrected before a whole loaf is ruined
- **B1** links clearly to an outcome, e.g. this is why the fault rate falls from 3% under end-of-line quality control to 0.5% under quality assurance, cutting the number of wasted loaves
- **Answer: Quality assurance checks quality at every stage of baking, not just at the end, so problems are more likely to be caught and corrected before a loaf is ruined, which is why the fault rate falls from 3% to 0.5% and fewer loaves are wasted.**

Question 8

- **M1** 330 / 22 seen (ft from question 6)
- **A1** 15 batches cao
- **Answer: 15 batches.**

Question 9

- **B1** identifies the point, e.g. a fault is only found once a loaf has already gone through the full process, using up ingredients, labour and oven time
- **B1** develops the point, e.g. all of this cost has already been spent by the time the loaf is thrown away, unlike a fault caught and fixed earlier in the process
- **B1** links clearly to an outcome, e.g. this makes end-of-line quality control alone a more expensive way of dealing with faults, as reflected in the higher wastage cost calculated in question 4b
- **Answer: A fault under end-of-line quality control is only found after a loaf has gone through the full process, so all the ingredients, labour and oven time have already been spent, making it a more expensive way of dealing with faults, as reflected in the higher wastage cost in question 4b.**

Question 10

- **B1** identifies the point, e.g. training every member of staff to check quality at their own stage costs money, such as the 330 pound programme in question 8
- **B1** develops the point, e.g. adding checks at every stage of baking can also slow each stage down
- **B1** links clearly to an outcome, e.g. until the training cost is covered by the savings made (question 8), quality assurance is a net cost to Ashgrove, and daily output could temporarily fall while staff adjust to the new checks
- **Answer: Training every member of staff, such as the 330 pound programme in question 8, costs money, and adding checks at every stage can slow production down, so quality assurance is a net cost until the training cost is covered by the savings made, and output could temporarily fall while staff adjust.**

Question 11

- **B1** one acceptable role, e.g. the baker who mixes and prepares the dough
- **B1** a second acceptable role, e.g. the baker who oversees the oven/baking stage, or the member of staff who packages the finished loaves
- **Answer: Any two, e.g. the baker preparing the dough; the baker overseeing the oven; the staff member packaging loaves.**

Question 12

- **B1** identifies the point, e.g. customers expect a loaf to taste and look the same way every time they buy it
- **B1** develops the point, e.g. an inconsistent product, or one that is sometimes faulty, damages customer trust and satisfaction
- **B1** links clearly to an outcome, e.g. this can lose repeat customers and lead to poor word-of-mouth or reviews, reducing future sales
- **Answer: Customers expect a loaf to taste and look the same every time, so an inconsistent or faulty product damages trust, which can lose repeat customers and lead to poor word-of-mouth, reducing future sales.**

Question 13

- **B1** one acceptable method, e.g. visually inspecting each loaf for shape, colour or damage
- **B1** a second acceptable method, e.g. weighing loaves to check they meet the stated weight, or taste-testing samples from each batch
- **Answer: Any two, e.g. visual inspection; weighing to check standard size/weight; taste-testing samples.**

Question 14

- **M1** 22.00 x 5 x 48 seen (ft from question 6)
- **A1** 5,280 pounds cao
- **Answer: 5,280 pounds.**

Question 15

- **Level 1** (1-3): Makes simple, undeveloped comments about the quality-approach decision, with little or no use of the pack's figures and no clear recommendation.
- **Level 2** (4-6): Gives a developed argument for or against the quality assurance training programme, using some of the pack's figures, but does not fully weigh both sides or reach a clearly justified recommendation.
- **Level 3** (7-9): Weighs the evidence for and against the training programme, using the wastage-saving, payback and annual-saving figures from this pack, and reaches a justified recommendation supported by that analysis.
- **Indicative content:**
  - For investing: the training only costs 330 pounds and pays for itself after just 15 batches (question 8), which at 5 batches a week (question 14) is only 3 weeks of trading, a short payback period.
  - For investing: once paid back, the approach goes on to save an estimated 5,280 pounds every year (question 14), a recurring benefit that end-of-line quality control alone cannot match.
  - Against investing: question 10 shows quality assurance has its own drawbacks, including the upfront training cost and the risk that adding checks at every stage temporarily slows production while staff adjust.
  - Against investing: end-of-line quality control is simpler to run and needs no extra staff training, which may suit Ashgrove better if it cannot spare staff time for training right now.
  - Judgement: given the short payback period of just 15 batches and the ongoing annual saving of 5,280 pounds, which far outweighs the one-off 330 pound cost and any short-term slowdown, a reasonable recommendation is that Ashgrove Bakery should invest in the quality assurance training programme.