

Design & Technology

Quality Monitoring Systems

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
- For the multiple choice questions, circle your 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. What is not part of quality control?

- A** Checking for accuracy
- B** Checking design against British standards
- C** Checking for safety

Q2. Who doesn't conduct quality assurance checks?

- A** FSC
- B** BSI
- C** ISO

Q3. What quality monitoring system can be described as reactive?

- A** Quality control
- B** Quality assurance

Q4. What quality monitoring system is used to find defects?

- A** Quality control
- B** Quality assurance

Q5. What can excessively tight tolerances lead to?

- A** Increased costs
- B** Having to test each item
- C** Reduced item rejection

Q6. What is not a disadvantage of quality control?

- A** Can be expensive
- B** Can slow down production
- C** Increases cost in development of product

Q7. What is not an advantage of TQM?

- A** Shorter production times
- B** Reduces development costs
- C** Improves business reputation

Q8. What is not a part of TQM?

- A** Integrated system
- B** Total employee involvement
- C** Good design integration

Q10. One quality control test that would be used during volume production of the sprocket and crank arm is to cheque dimensional accuracy.

Outline three further quality control checks that could be carried out on the assembled sprocket and crank arm. **(3 marks)**

1.

2.

3.

Q11. Evaluate the cost implications to a business of running effective quality control systems. **(7 marks)**

Q12. Outline the role of the international standards organisation (ISO). **(3 marks)**

Q13. A vinyl shop sign is to be created using a vinyl cutter. Give **two** checks on the vinyl that needs to be made before starting the cutting process. **(2 marks)**

Q14. Quality of products is an important issue when manufacturing. One disadvantage of quality control systems is the high set-up costs.

Give two further disadvantages of quality control systems. **(2 marks)**

Answers

Q1. B

Q2. A

Q3. A

Q4. A

Q5. A

Q6. C

Q7. B

Q8. C

Q9.

Advantages

- Employees in departments have a supplier–customer relationship with other departments/improved communications. (1)
- Employees are engaged in continuous improvement/encouraged to suggest improvements / take initiatives/simplify tasks. (1)
- Employees are responsible for the quality of their own work. (1)
- Employees are placed in teams. (1)
- Improved worker moral/workers feel valued/happy/good job satisfaction/pride. (1)
- Less employee absence. (1)
- Employees are more motivated (1)
- Employees are more productive/more efficient. (1)
- Employees are empowered to make decisions/given more responsibility. (1)
- Employees have improved health & safety/working conditions. (1)
- Employees have increased job security. (1)
- Opportunities for further training/increased skill levels. (1)
- Opportunities for internal promotion. (1)
- Employees receive competitive pay/improved standard of living (1)

Disadvantages

- Some employees may be put under additional stress/pressure/expected to work harder. (1)
- Some employees are reluctant to embrace changes. (1)
- Some may leave the business/become unemployed. (1)

Q10.

- Check material quality (with destructive/non-destructive tests), eg. strength/toughness/ hardness/durability/corrosion resistant/weight (1)
- Check function/does it work (freely rotate/smooth running chain) (1)
- Check that parts fit together (1)
- Check surface finish (scratches /dents/dirt/blemishes) (1)
- Check sharp corners/edges (1)
- Check casting quality (flaws /cracks/flashing/holes/ bubbles/miss-forms/broken parts) (1)
- Check for correct assembly (location/missing components tightness of screws) (1)
- Check threads are fully cut /formed (1)
- Check quality of decals/printing/position (1)

Q11.**Negatives**

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

Positives

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

Q12.

- Sets international standards for product testing (1)
- Sets company standards/quality assurance such as
- ISO9000 family (1)
- National standards are based on ISO standards (1)/
- BSI standards are created collaboratively with ISO (1)
- Provides compatibility of consumer products between
- countries throughout the world (1)
- Sets the standards which, if met, ensure products are
- safe/fit for purpose (1)
- Technical standards are often applied to products
- globally (1)
- Produces technical reports, guides and specialist
- publications to communicate quality standards (1)

Q13.

- Check for correct colours and graphics (1)
- Check type of material is correct/meets specification (1)
- Check for defects/damages/creased or smooth (1)
- Check quantity/size of material (1)
- Check thickness of material (1)

Q14.

- Can cause disruptions to/slow down production process (1)
- Partial sampling still allows faulty goods to reach customers (1)
- Quality control systems can be costly to run (1)
- Testing may be difficult in hazardous environments (1)
- Quality control is not 100% efficient (1)
- Quality control systems can divert scarce, trained human resources away from the production/maintenance process (1)
- Quality control equipment needs to be periodically checked and recalibrated (1)
- Destructive testing generates waste (1)
- Different markets/customers may require differing quality standards (1)