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Design & Technology
AQA A-Level

Scales of production

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. Which scale of production is best suited for creating a custom-made wedding dress?

A One-off Production

B Batch Production

C Quick Response Manufacturing

Q2. A bakery produces 200 loaves of sourdough bread each morning. This is an example of:

A Mass Production

B Unit Production System

C Batch Production

Q3. An automobile assembly line producing thousands of identical cars monthly uses which scale?

A Vertical In-house Production

B Mass/Line Production

C One-off Production

Q4. Which method uses interconnected workstations and automated handling to reduce delays?

A Unit Production System (UPS)

B Quick Response Manufacturing

C Batch Production

Q5. Explain why a manufacturer may choose to use a vertical in-house production system **(6 marks)**

Q6. Discuss the advantages and disadvantages of buying a bespoke item of furniture for the home **(6 marks)**

Q7. The manufacturer of a new electric car uses quick response manufacturing (QRM) techniques. Evaluate why the manufacturer of the vehicle may choose to use quick response manufacturing (QRM) techniques **(9 marks)**

Answers

Q1. A
Q2. C
Q3. B
Q4. A

Q5.

- removes the reliance of a company on third party manufacturers to supply components and parts
- offers the manufacturer greater control over the pricing of its products as it removes the risk of unexpected price increases from its suppliers
- can reassure the manufacturer that their product is less susceptible to a delay in manufacture due to the supply and transportation of components from third party manufacturers
- mitigates against the supply of components ending should the supplier go bust
- can allow manufacturers greater control over the quality assurance procedures and provide increased confidence in the quality of their product
- can improve the security of the intellectual property rights of the company, by removing the amount of companies involved in the product's manufacture
- can mean that design developments or improvements can be quickly introduced without the need to communicate or involve third party component manufacturers
- can allow manufacturers to train and deploy staff to other areas of the production process providing additional flexibility

Q6.

Advantages

- Bespoke furniture will be designed and manufactured to a particular size which may have been measured by an onsite visit. This in turn means that that furniture when produced would be a perfect fit for the location.
- Bespoke furniture allows the client to communicate their wishes to the manufacturer, allowing for the selection of colours to match existing décor or selection of materials to match existing furniture.

- The purchase of bespoke furniture allows the customer to select a particular designer or manufacturer based on their reputation or existing portfolio of work.
- Bespoke furniture can be designed to fulfil all of the aesthetic and functional needs of the client.

Disadvantages

- Bespoke furniture will be more expensive than an off-the-shelf equivalent product due to the cost of the craftsman, the lack of cost-saving mass production techniques and the less efficient use of material associated with having to create custom sections or forms.
- The manufacture of bespoke furniture is a great deal more time consuming than selecting an off-the-shelf piece for subsequent delivery. This means that the customer's order would be subject to an extended lead time.
- Bespoke furniture is less likely to make use of knock down fittings or bought in components.
- If the furniture becomes damaged or a component needs replacing, it is unlikely for the customer to be able to easily access the necessary spares.

Q7.

Answers may refer to the following points:

- Efficiency
- Move from batch to flow production
- Use of total quality management (TQM)
- Just In Time (JIT)
- Flexibility of teams/manufacturing cells
- Use of flexible manufacturing systems (FMS)
- Production triggered by demand
- Less storage needed
- Lass capital tied up in stock
- Use of a pull process/kanban system
- High automation including robots abd AGVs
- Increased reliance on the supply chain

Expansion that can be used to justify judgements relating to positive or negative points:

- Incorporation of customer options

- More able to capitalise on change in demand
- Immediate shipping of goods
- Minimisation of waste
- Production teams take responsibility for quality
- Improved job satisfaction
- Attracts customers
- Industrial action in supply chain causes disruption
- Transport problems causes delays
- Capacity to meet large changes in demand
- Changes the roles and responsibilities of employees