**Design & Technology**

**AQA A-Level** Logo

Description automatically generated with low confidence

**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