



88076204

**DESIGN TECHNOLOGY
STANDARD LEVEL
PAPER 1**

Wednesday 14 November 2007 (afternoon)

45 minutes

INSTRUCTIONS TO CANDIDATES

- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.

1. Designers working in the field of genetic engineering rely upon knowledge from which of the following?
 - I. science
 - II. technology
 - III. philosophy
 - A. I only
 - B. II only
 - C. III only
 - D. I, II and III

2. For which of the following products was the design work mainly radical?
 - A. Lap top computer
 - B. Mobile phone
 - C. Microwave oven
 - D. Solar powered calculator

3. The designer normally spends **most** time collaborating with the client at which stage of the design cycle?
 - A. Brief
 - B. Generating ideas
 - C. Planning and realising the chosen solution
 - D. Testing and evaluating the chosen solution

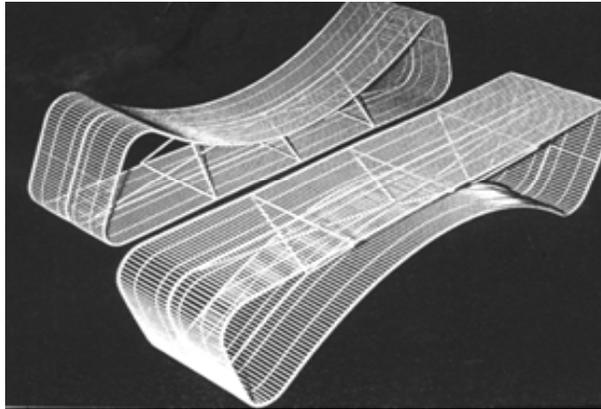
4. Which does **not** contribute to a brainstorming session?
- A. Teamwork
 - B. Convergent thinking
 - C. Absurd ideas
 - D. Lack of criticism
5. In designing a bridge which type of model is the designer **most** likely to use to evaluate the strength of the structure?
- A. Physical
 - B. Algorithm
 - C. Flow chart
 - D. Mathematical
6. Designers sometimes produce perspective drawings of products because
- A. they are easier to draw than isometric drawings.
 - B. they are suitable for CAD.
 - C. they are more realistic than other drawings.
 - D. they require little skill.
7. In which design context would CAD be less important than traditional drawing methods?
- A. Mass produced cars
 - B. Sports shoes
 - C. A wedding cake
 - D. Batch produced furniture

8. Which psychological factor is of **least** importance in the design of a mobile phone?
- A. Light
 - B. Temperature
 - C. Sound
 - D. Texture
9. Which adult percentile would **most** likely be used to decide the minimum height for the ceiling of a room?
- A. 99th
 - B. 75th
 - C. 50th
 - D. 5th
10. Which statement relates mainly to the consumer rather than the designer or manufacturer?
- A. Value-for-money
 - B. Planned obsolescence
 - C. Cost effectiveness
 - D. Fashion
11. Using a questionnaire to gather information for a design brief is an example of
- A. literature search.
 - B. user trial.
 - C. user research.
 - D. expert appraisal.

12. The use of solar power to replace batteries as the energy source for torches is an example of
- A. planned obsolescence.
 - B. life cycle analysis.
 - C. fashion.
 - D. social responsibility of the designer.
13. Which material in the IB classification of materials is subdivided into three?
- A. Timber
 - B. Ceramics
 - C. Food
 - D. Plastics
14. When designing a new bread recipe which property is **least** relevant?
- A. Hardness
 - B. Density
 - C. Stiffness
 - D. Tensile strength
15. Which material in the IB properties/materials matrix is low in density, hardness, thermal conductivity and high in electrical resistivity?
- A. Textile fibres
 - B. Timber
 - C. Ceramics
 - D. Food

Questions 16 and 17 relate to Figure 1.

Figure 1: CAD image of a bench to be made from steel wire



[Source: designed by Shin and Tomako Azumi (UK)]

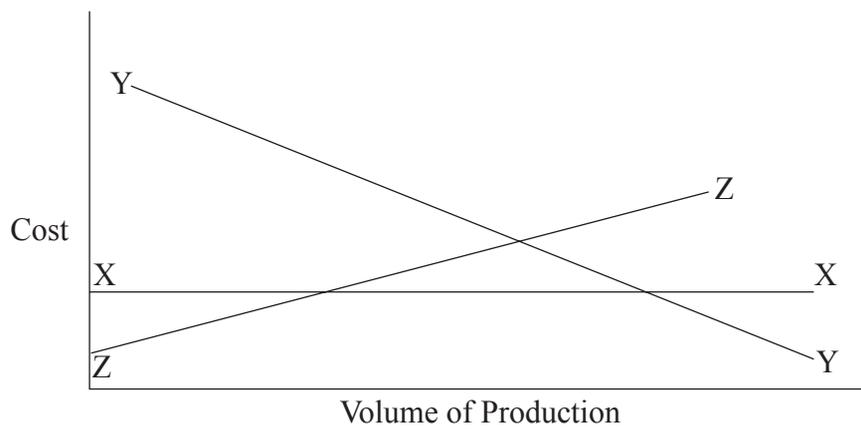
16. Which technique would be appropriate to shape the bench?
- A. Bending
 - B. Moulding
 - C. Casting
 - D. Abrading
17. Which technique is **most** likely to be used to join the steel wires together?
- A. Using adhesives
 - B. Fusing
 - C. Using fasteners
 - D. Stitching

18. Which technique is used with a composite material of metal and ceramics to form a component?
- A. Injection moulding
 - B. Extension
 - C. Sintering
 - D. Lamination
19. Which technique has the lowest set-up costs for the production of the mould?
- A. Lamination
 - B. Extrusion
 - C. Sintering
 - D. Injection moulding
20. In which production process is a product designer **most** directly involved?
- A. Automation
 - B. Craft production
 - C. Mechanisation
 - D. Assembly line
21. Which production process does not involve robots?
- A. Automation
 - B. Assembly line production
 - C. Batch production
 - D. Mechanisation

22. What is a benefit of assembly line production to consumers?

- A. Cheaper products
- B. A wider variety of products
- C. A skilled workforce producing better products
- D. Flexibility of manufacture

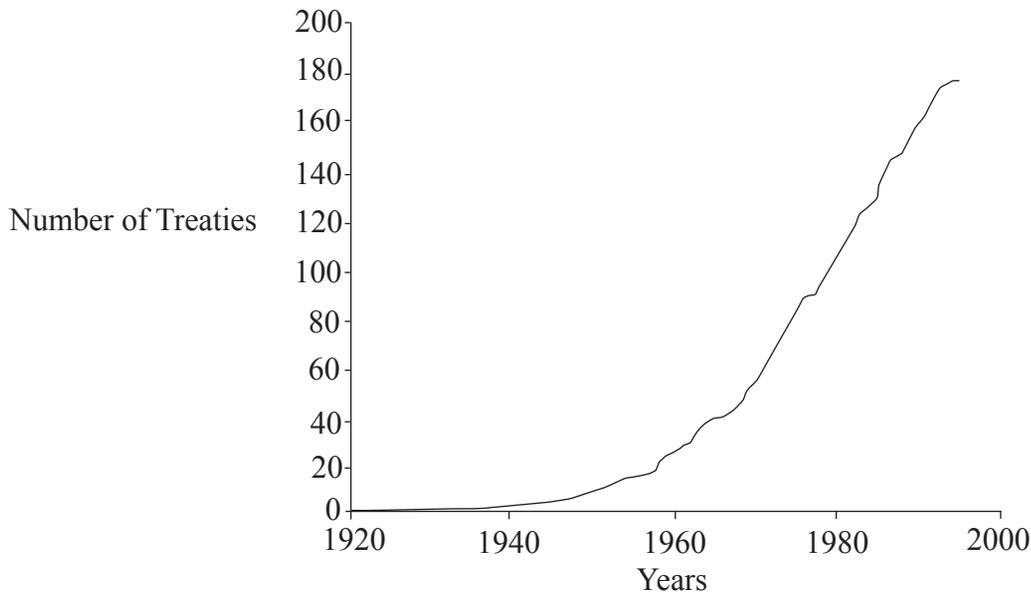
23. **Figure 2: Diagram of fixed costs related to variable costs**



For the three costs in the graph above, the item cost and variable costs would be represented by

	Item	Variable
A.	Z	Y
B.	X	Y
C.	Y	Z
D.	X	Z

24. **Figure 3: Graph of growth of international environmental treaties between the period of 1920 - 2000**



A possible reason for the sharp increase in treaties after 1960 is that

- A. there was minimum damage to the environment before 1960.
- B. there was no mass production before 1960.
- C. after 1950 the technological revolution took place.
- D. governments became more environmentally pro-active after 1960.

25. Reducing pollution and waste from a manufacturing process is an example of

- A. green design.
- B. life cycle analysis.
- C. clean technology.
- D. sustainable design.

26. Which is **least** likely to persuade a company to adopt strategies for green design?
- A. Legislation
 - B. Market pull
 - C. More energy efficient process of manufacture
 - D. An increased cost of production
27. Clean technology is the **most** likely environmental strategy adopted by companies because
- A. manufacturers are keen to make changes.
 - B. adopting life cycle analysis is more difficult.
 - C. manufacturers need to comply with legislation.
 - D. it does not increase costs.
28. Life cycle analysis should be considered at which stage of the design cycle?
- I. the brief
 - II. research and specification
 - III. generating ideas
- A. I only
 - B. II only
 - C. III only
 - D. I, II and III

29. The use of different plastics in cars has the **most** harmful impact on the environment due to the fact that using plastics
- A. saves fuel by reducing weight.
 - B. makes recycling more difficult.
 - C. makes forming shapes easier.
 - D. means additional surface finishes are not required.
30. What is likely to make it more difficult to encourage manufacturers to use recycled raw materials?
- A. Conservation of natural resource
 - B. Increased cost of recycled raw material
 - C. Minimisation of the amount of waste disposal
 - D. Consumer pressure
-