



**DESIGN TECHNOLOGY  
STANDARD LEVEL  
PAPER 1**

Wednesday 4 May 2005 (afternoon)

45 minutes

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**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. What is included in the Product Design Specification (PDS) but not in the design brief?
  - A. The design goal
  - B. The target market
  - C. The criteria for a good design proposal
  - D. The precise limits for performance requirements
  
2. Which aspects of the Product Design Specification (PDS) only have to be met if technically or economically feasible?
  - A. Performance characteristics
  - B. Safety requirements
  - C. Demands
  - D. Wishes
  
3. What is **not** represented in the IB elaborated design cycle?
  - A. Designing is a linear process
  - B. Evaluation takes place throughout the process not just at the end
  - C. Ideas for possible solutions may emerge early in the process
  - D. Communication is a key part of the design process
  
4. What is defined as “drawing on a similar situation for a solution”?
  - A. Adaptation
  - B. Analogy
  - C. Constructive Discontent
  - D. Divergent Thinking

5. An exploded isometric drawing shows
- A. the details and dimensions of a design and could be used as a production drawing.
  - B. the shape and form of a design in the early stages of its development.
  - C. a proposed solution in 3D showing shape and form.
  - D. how components of a product fit together.
6. At which stage in the life cycle of a product would a full-size clay model be used?
- A. Pre-production
  - B. Production
  - C. Utilization
  - D. Disposal
7. What is most likely to result in changes to the design of a product in the early stages of its product cycle?
- A. Constructive discontent
  - B. Adaptation
  - C. Analogy
  - D. Brainstorming
8. What is **not** true of an ergonome?
- A. It is a scaled 3D model
  - B. It is a scaled 2D model
  - C. It is based on a specific percentile range
  - D. It is used to establish spatial considerations between people and products

9. Which percentile value would a designer be most likely to use when designing the length of a bed?
- A. 1
  - B. 5
  - C. 50
  - D. 95
10. Which evaluation criterion is of particular importance to manufacturers?
- A. Value for money
  - B. Aesthetics
  - C. Cost-effectiveness
  - D. Availability
11. A performance test is used to
- I. prove that the product complies with relevant standards.
  - II. show how users carry out tasks.
  - III. compare a product with others of a similar design.
- A. I and II
  - B. II and III
  - C. I and III
  - D. I, II and III

12. Which combination of “ease of repair” and “frequency of replacement” characterizes planned obsolescence?

	<b>Ease of repair</b>	<b>Frequency of replacement</b>
A.	High	Low
B.	High	High
C.	Low	Low
D.	Low	High

13. Which material group has very low electrical resistivity and very high toughness?

- A. Timber
- B. Metals
- C. Ceramics
- D. Plastics

14. The ability of a material to resist penetration or scratching defines

- A. hardness.
- B. stiffness.
- C. density.
- D. toughness.

15. Which property is most likely to be evaluated using qualitative data?

- A. Electrical resistivity
- B. Hardness
- C. Smell
- D. Tensile strength

16. Using a chemical substance to bond two surfaces together is known as
- A. adhesion.
  - B. fusing.
  - C. stitching.
  - D. fastening.
17. Which technique usually uses batch production to combine different materials to produce large complex shapes?
- A. Injection moulding
  - B. Sintering
  - C. Lamination
  - D. Extrusion
18. What distinguishes sintering from injection moulding?
- A. No finishing is required
  - B. It is suitable for high melting point materials
  - C. A mould is required
  - D. There is a limitation to the size and shape of products
19. Which property affects a material's suitability for cutting and machining?
- A. Electrical resistivity
  - B. Ductility
  - C. Toughness
  - D. Thermal Conductivity

20. Which combination of “changes to the design” and “sales” best describes the mature stage of the product life cycle?

	<b>Changes to the design</b>	<b>Sales</b>
A.	Many	Increasing
B.	Many	Steady
C.	Few	Decreasing
D.	Few	Steady

21. Which combination of “flexibility” and “consistency of product quality” characterizes an automated system?

	<b>Flexibility</b>	<b>Consistency of product quality</b>
A.	High	High
B.	High	Low
C.	Low	High
D.	Low	Low

22. Which manufacturing system integrates product design and manufacture?

- A. CAD
- B. CAM
- C. CIM
- D. CNC

23. Which cost makes the major contribution to the final cost of a hand-crafted wooden toy?
- A. Capital
  - B. Labour
  - C. Research
  - D. Sales
24. Clean technology applies to which of the following stages in the product life cycle?
- I. Production
  - II. Distribution
  - III. Utilization
- A. I and II
  - B. I and III
  - C. II and III
  - D. I, II and III
25. Which term best represents the objectives of life cycle analysis?
- A. End-of-pipe
  - B. Cradle to grave
  - C. Clean technology
  - D. Green design
26. Which benefit is achieved by adding clean-up technologies to the end of a manufacturing process?
- A. Lower energy consumption
  - B. Less waste
  - C. Less pollution
  - D. More efficient use of natural resources

27. Acid rain which damages forests is caused by
- A. carbon dioxide from the burning of fossil fuels.
  - B. sulfur dioxide from the burning of fossil fuels.
  - C. chlorofluorocarbon gases being used as propellants for aerosols.
  - D. carbon monoxide from car exhausts.
28. Upgrading a computer by replacing the central processing unit with a more powerful one is an example of
- A. reuse.
  - B. repair.
  - C. recycling.
  - D. reconditioning.
29. Which environmental consideration is affected by inappropriate disposal of refrigerant gases at the end of the life of a refrigerator?
- A. Air contamination
  - B. Consumption of natural resources
  - C. Noise
  - D. Water relevance
30. For which stage of the life cycle of a refrigerator would redesign to reduce energy consumption have the most significant benefits for environmental impact?
- A. Preproduction
  - B. Production
  - C. Distribution
  - D. Utilization
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