



**DESIGN TECHNOLOGY  
STANDARD LEVEL  
PAPER 1**

Thursday 18 May 2006 (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. The design brief does **not** identify
  - A. the design problem.
  - B. the major constraints for the design solution.
  - C. the target market.
  - D. the precise limits for the complete range of performance requirements which must be met.
  
2. Which term describes the incorporation of a new material or technology to produce a significant change to a design?
  - A. Incremental design
  - B. Radical design
  - C. Green design
  - D. Clean technology
  
3. It is important to annotate freehand drawings to
  - A. explain the thinking behind the visual images.
  - B. depict the proposed solution in 3-D.
  - C. enable them to be used as production drawings.
  - D. enable numerical manipulation.
  
4. The IB elaborated design cycle represents design thought and action better than the IB simple design cycle because it
  - A. is linear.
  - B. is a small cycle.
  - C. shows iteration.
  - D. does not include all major stages of the design cycle.

5. What is defined as “*analysing the situation which would benefit from re-design and working out a strategy for improving it*”?
- A. Adaptation
  - B. Analogy
  - C. Brainstorming
  - D. Constructive discontent
6. Designers use perspective drawings to
- A. make assumptions about a design.
  - B. see how big the final solution will be.
  - C. realistically represent an object.
  - D. completely finalise their solution.
7. At which stage in the design cycle would orthographic drawings be most relevant?
- A. Generating ideas
  - B. Developing the chosen solution
  - C. Planning and realizing the chosen solution
  - D. Testing and evaluating the chosen solution
8. Anthropometrics is the study of
- A. body measurements.
  - B. how humans relate to objects, systems and environments.
  - C. consumer preferences.
  - D. human behaviour.

9. What is true of an ergonome?
- I. It would be used by designers to consider the relationship between people and a product.
  - II. It is a two-dimensional physical model used with drawings of the same scale.
  - III. It is based on a specific percentile range.
- A. I and II
  - B. I and III
  - C. II and III
  - D. I, II and III
10. For which product dimension would a designer use the 50th percentile range?
- A. The height of a washing machine
  - B. The position of the control panel of a cooker
  - C. The length of sports shoes
  - D. The height of a door
11. For which stakeholder group would value for money be the highest priority?
- A. Retailers
  - B. Consumers
  - C. Designers
  - D. Manufacturers

12. Which method generates quantitative data to evaluate part of a design solution against its specification?
- A. Expert appraisal
  - B. Performance test
  - C. Literature review
  - D. User trial
13. In order to resist the propagation of cracks a material used to manufacture a tennis racquet should have high
- A. toughness.
  - B. hardness.
  - C. electrical resistivity.
  - D. stiffness.
14. Which material group is subdivided into natural and composite?
- A. Plastics
  - B. Food
  - C. Metals
  - D. Timber
15. Which material group has high density, high tensile strength and high stiffness?
- A. Ceramics
  - B. Plastics
  - C. Timber
  - D. Metals

- 16 Which technique is an example of shaping?
- A. Fusing
  - B. Machining
  - C. Stitching
  - D. Weaving
17. Which property combines with toughness to make a material suitable for lamination?
- A. Ductility
  - B. Thermal expansivity
  - C. Tensile strength
  - D. Thermal conductivity
18. Which technique fuses solid particles using heat and pressure?
- A. Injection moulding
  - B. Casting
  - C. Lamination
  - D. Sintering
19. What is an advantage of injection moulding?
- A. Labour intensive
  - B. High set up costs
  - C. Finishing is required
  - D. High volume production

20. Within all stages of the product cycle designers are
- A. in complete control.
  - B. in control of marketing.
  - C. involved but not necessarily in complete control.
  - D. not involved.

21. Which combination of capital costs and variable costs characterizes injection moulding?

	<b>Capital costs</b>	<b>Variable costs</b>
A.	High	Low
B.	High	High
C.	Low	Low
D.	Low	High

22. Mechanisation involves
- A. humans controlling machines for volume production.
  - B. painted lines under the surface of the shop floor.
  - C. computers controlling machines for volume production.
  - D. maintenance-free production systems.

23. Which combination of flexibility and labour costs characterizes automation?

	<b>Flexibility</b>	<b>Labour costs</b>
A.	Increased	Decreased
B.	Increased	Increased
C.	Decreased	Decreased
D.	Decreased	Increased

24. An environmental impact assessment matrix can be used to assess the
- A. water cycle.
  - B. design cycle.
  - C. product life cycle.
  - D. nitrogen cycle.
25. Using an empty plastic ice cream container as a toy box is an example of
- A. recycling.
  - B. reconditioning.
  - C. reuse.
  - D. repair.
26. Policing legislation relating to cleaning up the manufacturing process involves
- A. qualitative data from performance tests.
  - B. quantitative data from literature searches.
  - C. qualitative data from surveys around a manufacturing plant.
  - D. quantitative data from surveys around a manufacturing plant.
27. One example of an “end-of-pipe” approach to clean-up technologies is
- A. the development of renewable energy-based power generating equipment.
  - B. the use of filters to remove sulfur dioxide from the emissions from a power station.
  - C. the use of extrusion techniques to produce plastic pipe.
  - D. the development of a sustainable transport system.



- 28.** What will result from adopting an end of pipe approach to clean technology?
- A. Increased energy efficiency
  - B. Reduced emission of pollutants
  - C. Process modification
  - D. Product modification
- 29.** Labelling plastic products with the plastic type they are made from
- A. facilitates recycling of the plastic.
  - B. minimizes nuisances, such as noise or smell.
  - C. reduces energy consumption during manufacturing.
  - D. minimizes potential safety hazards.
- 30.** For which product is repair a relevant strategy?
- A. Single use camera
  - B. Vacuum cleaner
  - C. Glass bottle
  - D. Photocopier toner cartridge
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