

**DESIGN TECHNOLOGY
STANDARD LEVEL
PAPER 1**

Tuesday 18 May 2004 (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. Which statement best defines a product design specification (PDS)?
 - A. A description of a design problem.
 - B. The generation of design ideas.
 - C. A target market for the design.
 - D. The precise limits of all performance requirements.

2. In which stage of the IB simple design cycle model are detailed costings of a product best made?
 - A. Researching and specifications
 - B. Generating ideas
 - C. Developing the chosen solution
 - D. Planning and realizing the chosen solution

3. In which way does the IB elaborated design cycle model better represent design thought and action than the IB simple design cycle model?
 - A. Evaluation takes place at the end of the cycle
 - B. Market research is recognized
 - C. Designing is a linear process
 - D. Ideas emerge at the “Generating Ideas” stage

4. At which stage of the IB simple design cycle model are drawings made without using technical aids most likely to be used?
 - A. Identifying the problem and the brief
 - B. Generating ideas
 - C. Drawing the final solution
 - D. Realizing the chosen solution

5. In which technique for solving problems do designers draw most on similar situations for solutions?
- A. Adaptation
 - B. Animation
 - C. Analogy
 - D. Algorithm
6. Detailed orthographic drawings are best used to show
- A. early stages of product development.
 - B. 3-D views of a finished product.
 - C. the dimensions of a product for manufacturing.
 - D. how mechanical components fit together to make a product.
7. Which statement best describes the outcome of incremental design over a short period of time?
- A. No changes to a product
 - B. Small changes to a product
 - C. Large changes to a product by introducing new materials
 - D. A completely new product
8. The study of body measurements, *e.g.* size, strength and physical capacity, is called
- A. percentile range.
 - B. ergonomics.
 - C. anthropometrics.
 - D. bodily tolerances.

9. Observing drivers parking a prototype vehicle is an example of
- A. user research.
 - B. user trial.
 - C. expert appraisal.
 - D. performance test.
10. In the design of which product would the 5th – 95th percentile ranges normally be considered?
- A. A washing machine
 - B. A made-to-measure suit
 - C. A range of clothes for mass production
 - D. A piece of jewellery made by one-off production
11. The most efficient way of designing and producing a product from the manufacturer's perspective is known as
- A. cost-effectiveness.
 - B. value for money.
 - C. ergonomics.
 - D. manufacturing costing.
12. What is a disadvantage of planned obsolescence for consumers?
- A. More choice
 - B. Increased product innovation
 - C. More competition in the market
 - D. The need to replace products more often

13. A material that resists scratching is described as
- A. hard.
 - B. tough.
 - C. brittle.
 - D. stiff.
14. Tensile strength is the ability of a material to
- A. withstand pulling forces.
 - B. withstand pushing forces.
 - C. be drawn into a wire.
 - D. resist the propagation of cracks.
15. Which material group can be sub-divided into “ferrous” and “non-ferrous”?
- A. Timber
 - B. Plastic
 - C. Food
 - D. Metals
16. What is a general term for making products?
- A. Manufacturing process
 - B. Manufacturing technique
 - C. Mass production
 - D. Machining

17. What is an example of joining?

- A. Casting
- B. Fusing
- C. Weaving
- D. Moulding

18. Which properties are relevant to a material suitable for lamination?

- I. Toughness
- II. Tensile Strength
- III. Compressive Strength

- A. I, II and III
- B. I and II
- C. I and III
- D. II and III

19. What is a disadvantage of extrusion?

- A. No finishing required
- B. Size limitations
- C. Hollow shapes
- D. High volume production

20. What is true of volume production?
- A. The product is generally sold straight after being made
 - B. The product is designed for an individual customer
 - C. The product encourages extra sales
 - D. Hand tools are used
21. What is true of mechanising a production process?
- I. Product quality normally increases
 - II. Product cost decreases
 - III. Labour costs increase
- A. I and II
 - B. I and III
 - C. II and III
 - D. I, II and III
22. What are examples of fixed costs?
- A. Material costs
 - B. Packaging costs
 - C. Machinery costs
 - D. Distribution costs

23. Which product is in the mature, as opposed to the new or late, stage of its product life cycle?
- A. Ballpoint pen
 - B. Cassette tape
 - C. Floppy disc
 - D. DVD
24. Clean technology requires the participation of
- I. the designer.
 - II. the manufacturer.
 - III. the user.
- A. I and II
 - B. I and III
 - C. II and III
 - D. I, II and III
25. The most obvious initial response a company can make to reduce its emission of atmospheric pollutants is to
- A. minimise waste.
 - B. use renewable energy.
 - C. conserve natural resources.
 - D. apply an end-of-pipe approach.

26. What is **not** an objective of green design?
- A. Minimising environmental damage or pollution
 - B. Taking full accounts of the effects of the end disposal of a product
 - C. Decreasing production costs
 - D. Ensuring that the product functions efficiently for its full life
27. Which strategy promotes the repair of products?
- A. Specifying the use of non-standard parts during product design
 - B. Reducing the packaging material used for production distribution
 - C. Maximising energy efficiency in product use
 - D. Ensuring that the product is easy to maintain
28. Pre-production, production, distribution, utilisation and disposal are stages in
- A. a proactive environmental policy.
 - B. clean technology.
 - C. environmental considerations.
 - D. the life cycle of a product.
29. Eco-labelling schemes
- A. only consider energy consumption during use.
 - B. are used in every country.
 - C. promote green design.
 - D. do not consider noise during use.

30. Which products are often repaired?

- A. Car tyres
 - B. Vacuum cleaners
 - C. Disposable cameras
 - D. Food containers
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