



**DESIGN TECHNOLOGY
STANDARD LEVEL
PAPER 1**

Monday 7 November 2005 (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. A design brief is
 - A. the formal starting point for the design of a product.
 - B. a set of precise limits outlining performance requirements.
 - C. set by the manufacturer.
 - D. the criteria against which the design can be evaluated.

2. Which aspect of the elaborated design cycle mainly involves convergent thinking?
 - A. Research
 - B. Generating ideas
 - C. Identifying a need
 - D. Developing the chosen solution

3. The final product is tested and evaluated against the
 - A. design brief.
 - B. chosen solution.
 - C. product design specification.
 - D. detailed design.

4. Constructive discontent is a strategy for developing
 - A. a design brief.
 - B. a new solution.
 - C. an initial idea.
 - D. a working drawing.

5. Orthographic drawings
- A. show the final solution in 3D.
 - B. communicate initial design ideas.
 - C. are drawn at 30 degrees to the horizontal plane.
 - D. are used at the final manufacturing stage.
6. What can be represented by data in a spreadsheet?
- A. Physical model
 - B. Mathematical (symbolic) model
 - C. Prototype
 - D. Flow chart
7. As a result of a brainstorming session, it was decided to call a computer input device a mouse. This is an example of
- A. adaptation.
 - B. analogy.
 - C. constructive discontent.
 - D. convergent thinking.

- 8.** What is anthropometrics?
- I. Using body measurements, including size, strength and physical capacity.
 - II. The application of scientific information about humans to the design of objects.
 - III. The analysis of comments by people who have used a product.
- A. I only
 - B. II only
 - C. I and II only
 - D. I, II and III
- 9.** Which methods would be used for evaluating the ergonomics of a motorcar?
- I. User trial
 - II. User research
 - III. Expert appraisal
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III
- 10.** What is a disadvantage of planned obsolescence for consumers?
- A. More choice
 - B. Increased innovation
 - C. More competition
 - D. Need to replace products more often

11. Which percentile value would a designer use when designing the height of a door?

- A. 1
- B. 5
- C. 50
- D. 95

12. Expert appraisal of a product would enable a manufacturer to

- I. check compliance with relevant standards.
- II. collect data on how users abuse products.
- III. compare a product with other similar products.

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

13. Fashion is

- A. the business of putting goods on show.
- B. a style or trend.
- C. designing in a way that takes into account the environment.
- D. goods that go well together.

14. Which material group usually has very high thermal conductivity, high density and very high toughness?
- A. Metals
 - B. Timber
 - C. Ceramics
 - D. Plastics
15. Which property is difficult to quantify scientifically?
- A. Tensile strength
 - B. Density
 - C. Aesthetics
 - D. Stiffness
16. Which material group is difficult to classify due to its variability and the continual development of new materials?
- A. Timber
 - B. Metals
 - C. Composites
 - D. Food
17. Which manufacturing technique would be most suitable for the production of rectangular metal tubing?
- A. Sintering
 - B. Injection moulding
 - C. Extrusion
 - D. Welding

18. The advantage of injection moulding as a manufacturing technique is
- A. rapid production and little or no finishing required.
 - B. low capital costs.
 - C. can be used for a range of material groups.
 - D. the ability to produce continuous lengths of hollow shapes.
19. Shaping is best defined as
- A. a general term for making products.
 - B. putting two or more components together.
 - C. removing material using hand tools and machines to create shapes.
 - D. forming materials into shape by particular techniques.
20. What is a disadvantage of automating a production system?
- A. Increased capital costs
 - B. Increased flexibility of manufacturing
 - C. Reduced need for quality control
 - D. Increased employment
21. A product that has diffused into the marketplace, gained acceptance and is selling well with no sign of decline is at which stage of its product life cycle?
- A. Early
 - B. Mature
 - C. Late
 - D. Decline

22. Which system uses painted lines or infra-red (IR) rays?
- A. CAM
 - B. CNC
 - C. CAD
 - D. AGV
23. Which cost is high as a proportion of the total cost in a hand crafted wooden toy?
- A. Capital
 - B. Labour
 - C. Research
 - D. Sales
24. Which strategy can be considered an end of pipe approach to dealing with carbon dioxide emissions?
- A. Introducing new technologies
 - B. Enhancing efficiency in the use of energy
 - C. Using renewable energy resources
 - D. Planting trees to capture carbon dioxide
25. A major impetus for green design is pressure from
- A. designers.
 - B. manufacturers.
 - C. consumers.
 - D. retailers.

26. During which stage of the life cycle of a refrigerator would energy consumption be a major concern for the consumer?
- A. Production
 - B. Distribution
 - C. Use
 - D. Disposal
27. Which chemical causes destruction of the ozone layer?
- A. Oxygen
 - B. Carbon monoxide
 - C. Chlorofluorocarbon
 - D. Nitrogen
28. The behaviour of environmentally irresponsible companies has resulted in
- A. more efficient use of raw materials.
 - B. legislation.
 - C. less pollution.
 - D. increased product life.
29. Designing computers so that they can be upgraded is an example of
- A. reuse.
 - B. repair.
 - C. recycling.
 - D. redesigning.

30. What is **not** true of recycling glass bottles?
- A. Glass bottles should not be mixed with other types of glass
 - B. Broken glass is hard to sort
 - C. Labels must be removed from glass bottles before recycling by consumers
 - D. The high temperature of glass processing removes any contamination from the bottles
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