



**DESIGN TECHNOLOGY  
STANDARD LEVEL  
PAPER 1**

Thursday 11 November 2010 (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.

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1. How many stages are represented in the IB design cycle model?
  - A. 5
  - B. 6
  - C. 7
  - D. 8
  
2. Which pair of techniques for generating ideas has similar characteristics?
  - A. Attribute listing/morphological analysis
  - B. Adaptation/analogy
  - C. Morphological analysis/adaptation
  - D. Analogy/attribute listing
  
3. Which type of drawing would be **most** suitable to show the public a proposed new design for the interior of an airport building?
  - A. Orthographic
  - B. Isometric
  - C. Exploded isometric
  - D. Perspective
  
4. Why is annotation of freehand drawings important to aid design development?
  - A. They describe the drawing
  - B. They label the parts of the drawing
  - C. They improve the presentation of the drawing
  - D. They explain the drawing

5. What is an advantage of using a mathematical model at the design development stage of a structure?
- A. It is easier to understand than a physical model.
  - B. It is a good representation of the shape and form of the structure.
  - C. It is cost-effective.
  - D. It requires little skill.
6. What is a characteristic of the product cycle?
- A. It has become shorter
  - B. It has become longer
  - C. The designer is not involved
  - D. The designer usually has full control
7. What is an objective of green design?
- A. Longer product life cycle
  - B. Shorter product life cycle
  - C. Longer design cycle
  - D. Shorter design cycle
8. One objective as a result of a life cycle analysis of a washing machine is to redesign the machine with reduced weight. Which part of the life cycle does this affect **most**?
- A. Production
  - B. Use
  - C. Distribution
  - D. Disposal

9. Which design for manufacture (DfM) strategy would be **most** appropriate when designing a product for ease of recycling at the end of its life?
- A. Design for materials
  - B. Design for process
  - C. Design for assembly
  - D. Design for disassembly
10. What is a difficulty in satisfying take-back legislation for cars?
- A. No design for disassembly
  - B. Lack of recyclable materials
  - C. Global manufacturing
  - D. Extended product life cycle
11. Which material is classified as a mixture?
- A. Metal
  - B. Composite
  - C. Ceramic
  - D. Timber
12. Which material group has four divisions?
- A. Timber
  - B. Textiles
  - C. Metals
  - D. Ceramics

13. What is a disadvantage of using a composite timber for manufacturing furniture?
- A. It is more expensive than hardwood
  - B. It is difficult to cut
  - C. It is only strong across the grain
  - D. It limits the range of construction techniques that can be used
14. Which metal would be appropriate to use for a superalloy required to resist high temperatures?
- A. Iron
  - B. Nickel
  - C. Cobalt
  - D. Silver
15. Which plastic is a thermoset?
- A. Polyethene
  - B. Polypropene
  - C. Polyvinylchloride (PVC)
  - D. Polyurethane
16. Which type of glass is **most** likely to be used as a glass top for a coffee table?
- A. Pyrex
  - B. Laminated
  - C. Toughened
  - D. Lead crystal

17. Magneto-rheostatic materials are used for which car parts?
- A. Engine mounts
  - B. Shock absorbers
  - C. Valves
  - D. Clutches
18. Which material is **not** suitable for casting?
- A. Metal
  - B. Timber
  - C. Food
  - D. Ceramic
19. What is an advantage to the consumer of the use of fasteners with textiles?
- A. Cost-effectiveness
  - B. Value for money
  - C. Durability
  - D. Ease-of-use
20. Why is craft production increasing in popularity in industrialized countries?
- A. To create cheaper products
  - B. Reduced amount of skills required
  - C. Market pull
  - D. Technology push

21. What is an advantage of a *just-in time* (JIT) system?
- A. It is easy to introduce.
  - B. It puts less pressure on workers.
  - C. It is not related to market conditions.
  - D. It optimizes production.
22. What limits the increased use of clean technology?
- A. Lack of legislation
  - B. Lack of incentives
  - C. Spread of global manufacturing
  - D. Complexity of clean technology
23. Which adult percentile for reach would be used to decide the maximum height of a wall-mounted kitchen cupboard?
- A. 5th
  - B. 50th
  - C. 75th
  - D. 95th
24. What is an advantage of planned obsolescence for the consumer?
- A. More choice of products
  - B. Cheaper products
  - C. More reliable products
  - D. More stylish products

25. Which strategy is appropriate for a user trial?
- A. Obtaining user responses
  - B. Observing user behaviour
  - C. Identifying user needs
  - D. Identifying user preferences
26. Which criterion would be used to assess value for money in relation to long-term use?
- A. Reliability
  - B. Safety
  - C. Ease-of-use
  - D. Performance

Questions 27–30 relate to the following case study. Please read the case study carefully and answer the questions.

**Figure 1** shows the “buddi” a miniaturised GPS (global positioning system) tracking and GPS personal locator suitable for locating people who are lost or stranded. It costs GBP299 plus GBP240/year to be connected to a 24/7 365 days a year customer response team. The buddi works in two ways: one, the wearer presses the emergency button and the response team will contact the wearer or alert the emergency services; or two, the position of the wearer can be located on an online map so parents, for example, could locate a lost child. In case of an emergency the wearer can show the buddi to any person in authority who is then able to contact the customer response team via the information printed on the device. Another version of the buddi has been produced called the “petbuddi” which is very small, lightweight, waterproof pet tracking device so owners can locate their lost pet.

**Figure 1: Buddi personal safety tracking device**



[Used with permission ([www.buddi.co.uk](http://www.buddi.co.uk))]

27. Which marketing strategy is the adaptation of the petbuddi an example of?
- A. Market penetration
  - B. Market development
  - C. Product development
  - D. Diversification

28. What is the **most** likely barrier to the buddi being a successful innovation?
- A. Market
  - B. Aesthetics
  - C. Cost
  - D. Ease of use
29. Which combination of properties is required for the material of the casing of the buddi?
- I. Tensile strength
  - II. Toughness
  - III. Hardness
- A. I and II only
  - B. II and III only
  - C. I and III only
  - D. I, II and III
30. What is the **most** important criterion for evaluating the success of the Buddi?
- A. Aesthetics
  - B. Manufacturing costs
  - C. Reliability
  - D. Materials cost
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