M11/4/DESTE/SPM/ENG/TZ0/XX

22116204

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

DESIGN TECHNOLOGY
STANDARD LEVEL
PAPER 1

Monday 9 May 2011 (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 stage of the design cycle involves most discussion between the designer and the client?

A. Brief

B. Research

C. Generating initial ideas

D. Developing a final solution

2. Which drawing technique is most useful to the manufacturer?

A. Freehand

B. Perspective

C. Orthographic

D. Isometric

3. In the design development stage why is clay used to create a full-size model of a new car design?

A. It is cheap.

B. It is easy to manipulate.

C. It is readily available.

D. It makes the designer's role less complex.

4. Which characteristic describes divergent thinking?

A. Analytical and solution focused

B. Analytical and problem focused

C. Conceptual and problem focused

D. Conceptual and solution focused

5. What has had most impact on the shortening of the product cycle?

A. Computer aided design

B. Better qualified designers

C. More manufacturers

D. Technology

6. **Figure 1** shows the Solid Extreme mobile phone marketed by Samsung, a company which has produced many different mobile phones. It is designed to withstand extreme conditions with a heavy-duty waterproof rubber body and features a camera, FM radio, flashlight and an emergency alert system with a direct link to a nominated person. The Solid Extreme phone is an example of which corporate strategies?

Figure 1: Solid Extreme

Source: www.vodafone-promotions.co.uk. Image used with permission.

I. Product development

II. Market development

III. Diversification

A. I and II

B. II and III

C. I and III

D. I, II and III

7. **Figure 2** shows the Purelight Wand which is a new hand-held type of cleaning aid used to eliminate bacteria from surfaces. As the user passes the Wand over the surface it works by using the sterilizing power of UV-C light to kill bacteria rather than using disinfectant. The Purelight Wand is powered by a rechargeable battery. Which environmental consideration in life cycle analysis has most benefit during the use of the Purelight Wand?

Figure 2: Purelight Wand

Used with permission: www.purelighteurope.com.

A. Water contamination

B. Energy consumption

C. Air contamination

D. Consumption of natural resources

8. What is a possible limitation of large scale recycling schemes?

A. Lack of technology

B. Development of new materials

C. Depletion of resources

D. Economics

9. Which green strategy is appropriate for disposable cameras?

A. Re-use

B. Recondition

C. Repair

D. Recycle

10. Which material group is made up of fibres?

A. Metals

B. Plastics

C. Ceramics

D. Timber

11. Which characteristic applies to a covalent bond?

A. Involves the sharing of electrons between molecules

B. Involves the sharing of electrons between specific atoms

C. Involves atoms in a sea of electrons

D. Involves electrostatic forces between ions

12. Why is hardwood timber usually more expensive to purchase than softwood timber?

A. It only grows in remote parts of the world.

B. Time to reach maturity.

C. There is less demand for it.

D. It is more difficult to work with.

13. What is a limitation of the use of glass as a packaging material?

A. Difficult to manufacture

B. Amount of energy used in manufacture

C. Cost of raw materials

D. Difficult to recycle

14. What is **not** affected by creating an alloy for a metal tube?

A. Aesthetics

B. Malleability

C. Cross-sectional area

D. Tensile strength

15. Which characteristic refers to the effect of creep in a plastic material under a heavy load?

A. Molecular chains remain static

B. A 3D molecular structure is formed

C. Primary bonds weaken

D. Secondary bonds weaken

16. Piezoelectric materials are used for

A. car shock absorbers.

B. robotic limbs.

C. sensors.

D. eye-glass frames.

17. Which is most likely to be the largest contributor to the final cost of a mass produced car?

A. Materials

B. Research and development

C. Labour

D. Overheads

18. Which process is low volume?

A. Craft production

B. Mechanisation

C. Just-in-time (JIT)

D. Just-in-case (JIC)

19. Which manufacturing technique would allow for ease-of-repair?

A. Weaving

B. Stitching

C. Moulding

D. Fusing

20. Which characteristic is demonstrated by assembly-line production?

A. Products made to order

B. Unique products

C. Computer control of products

D. Standardisation of products

21. What is a limitation of setting internationally agreed targets for reducing pollution and waste from industry?

A. Lack of quantitative data

B. Lack of legislation

C. Lack of political will

D. Lack of agreement in setting targets

22. What may be considered a moral responsibility for designers?

A. Ensuring the design is suitable for multi-national companies.

B. Ensuring the design is value-for-money.

C. Ensuring the design is fashionable.

D. Ensuring the design has planned obsolescence.

23. Manufacturers often ask consumers to complete a questionnaire when purchasing a new product. What is this an example of?

A. Expert appraisal

B. Literature search

C. User trial

D. User research

24. What is an important aspect of a field trial?

A. Product testing

B. Advertising

C. Sales

D. Design development

25. What determines the final price of a product?

A. How much it costs to manufacture

B. A set profit margin

C. Consumer demand for a product

D. The product life cycle

26. Which strategy is **most** likely to be used by consumer associations to provide data to consumers concerning value-for-money when purchasing household appliances?

A. Performance test

B. User trial

C. User research

D. Expert appraisal

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

Figure 3 shows the USB Snakescope camera. It is powered by connecting it to the USB port of a computer. It has a semi-flexible tube with a webcam at the tip and transmits an image to the screen of the computer. The camera can be used to locate items in hard-to-reach places such as behind heavy furniture or underneath a cupboard. There are two LEDs which illuminate the space being inspected and a clip-on magnetic attachment enabling the user to retrieve metallic items easily.

Figure 3: The Snakescope camera

[Source:www.firebox.co.uk]

27. Which ideas generating technique was used to decide on the name of the USB Snakescope camera?

A. Adaptation

B. Analogy

C. Constructive discontent

D. Morphological synthesis

28. Which combination of ergonomic factors has been used for the size and shape of the handle of the USB Snakescope camera?

I. Anthropometric

II. Physiological

III. Psychological

A. I and II only

B. II and III only

C. I and III only

D. I, II and III

29. Which property is most important in the design of the semi-flexible tube?

A. Stiffness

B. Toughness

C. Density

D. Hardness

30. What is the USB Snakescope camera an example of?

A. Robust design

B. Dominant design

C. Invention

D. Innovation