RECURSO LIMITED

HONG KONG DIPLOMA OF SECONDARY EDUCATION MOCK EXAMINATION 2026

DESIGN AND APPLIED TECHNOLOGY
PAPER 2A - 2D

11:15 am - 1:15 pm (2 hours for Paper 2)

This paper must be answered in English

GENERAL INSTRUCTIONS

1. Candidates should attempt the **two** elective papers (2A - 2E) they chose when registering for the examination. Answers written for papers that candidates have not registered for will not be marked.
2. Candidates are advised to spend around one hour for each paper you attempt.
3. Answer any **two** questions for each of the papers you attempt.
4. If you attempt Q.4 of Paper 2B, write your answers to that question in the Worksheet provided. Candidates should fasten the Worksheet with string inside the Answer Book upon submission.

Instruction for Candidates NOT Attempting Paper 2E

5. Write your answers to each of the papers you attempt in the same Answer Book.

Instructions for Candidates Attempting Paper 2E

6. Write your answers to Paper 2E in the Question-Answer Book provided.
7. Answers to the other paper you attempt should be written in the Answer Book.
8. The Question-Answer Book and the Answer Book will be collected separately at the end of the examination.

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PAPER 2A Automation

Question 1-3 are not provided as no candidate sat the English version of this paper.

Turn over the page for Paper 2B Creative Digital Media.

PAPER 2B Creative Digital Media

Candidates who choose this paper should attempt two questions from Q.4 – Q.6.
Answers to Q.4 should be written in the Worksheet provided.
Answers to other questions should be written in the Answer Book provided.
Candidates should fasten the Worksheet with string inside the Answer Book upon submission.

4. "iAM Smart" is a one-stop personalised digital service platform launched by the Government of the Hong Kong Special Administrative Region.

The figure below shows the logo of "iAM Smart."

(a) Based on the logo design above, describe **two** visual contents and explain their denotation. (4 marks)

(b) "iAM Smart" has the following three main functions:

Authentication	Log in to various public and private online services with a single account, without the need to remember different usernames and passwords.
"e-ME" Form Filling	Auto-fill government online forms without repeatedly entering personal information.
Personal Assistant	Provide reminder functions for service-specific information, such as application deadlines and payment due dates.

(i) Select **one** of the three functions above and, using a coloured annotated sketch, design a virtual character for promoting that function. The front and side views of the design should be shown. (4 marks)

(ii) Write down **two** design considerations of designing the virtual character in (b)(i). (2 marks)

(iii) Use the virtual character from (b)(i) as the main character to design a 30-second video to promote the selected "iAM Smart" function. The virtual character should appear in the promotional video. Use a storyboard of six frames on the Worksheet provided to illustrate your concept. At least one camera movement must be applied. (14 marks)

(c) Write down the function of a "keyframe" in animation production. (1 mark)

5. The screenshots below were taken from a 30-second promotional video from the Fire Services Department. The theme is 'Learn the Art of Fire Escape.'

Screenshot 1: 'Master! Please take us as your disciples!'

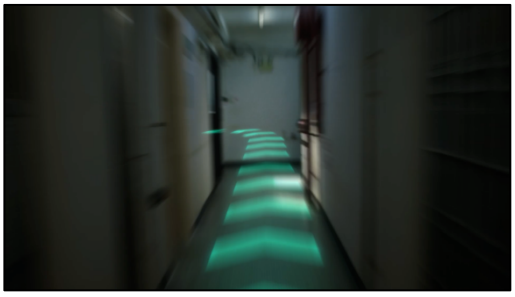
Screenshot 2: 'Okay! Let me teach you the art of Fire Escape'

Screenshot 3

Screenshot 4: 'Do the basics well'

Screenshot 5: 'Close all smoke stop doors'

Screenshot 6



Screenshot 7

Screenshot 8

Screenshot 9: 'Familiarise yourselves with the escape routes'

Screenshot 10: 'In case of fire'

Go on to the next page

Screenshot 11: ‘check your surroundings and assess your physical condition’

Screenshot 12

Screenshot 13: ‘If you decide to leave your unit’

Screenshot 14: ‘bring along the three useful items’

Screenshot 15: ‘All the staircases are filled with smoke!’

Screenshot 16: ‘Don't take risks’

Screenshot 17: ‘If escape is not feasible, get back to your unit’

Screenshot 18: ‘seal all door gaps’

Screenshot 19: ‘and call 999 for help’

Screenshot 20: ‘Learn the art of Fire Escape’

(a) State the camera setting that needs to be adjusted when recording Screenshot 3 to Screenshot 4, explain how it is applied, and describe the visual effects. (4 marks)

(b) State the camera movement shown in the following screenshots.

(i) Screenshot 6 to 8; (1 mark)

(ii) Screenshot 12 to 13. (1 mark)

(c) State the video post-production technique for screenshot 9 and explain your answer. (2 marks)

(d) State the camera angle used for screenshot 11 and describe the visual effects. (2 marks)

(e) State the sizes of shots used for the following screenshots and describe their visual effects.

(i) Screenshot 10; (2 marks)

(ii) Screenshot 17. (2 marks)

(f) In Screenshot 14, the key, mobile phone and wet towel are all produced by computer animation. Give **two** rendering effects that should be added to match the real shots after the three-dimensional virtual characters are created. (2 marks)

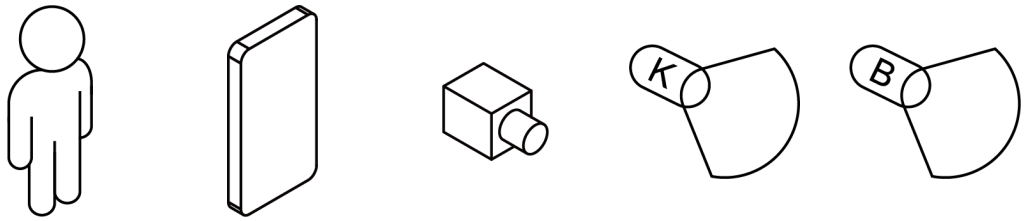
(g) Indicate the lighting colour used for screenshot 16 and describe its visual effect. (2 marks)

(h) Based on Screenshots 19:

(i) The "Call 999" interface shown on the mobile phone screen in the shot is not real footage. Describe the production method; (2 marks)

(ii) Explain one reason why post-production compositing is required for the interface; (1 mark)

(iii) With reference to the icons provided below, draw and describe the setup of Screenshots 19 and indicate the positions and directions of the camera, key light and back light. (4 marks)



Actor Phone model Camera Key light Back light

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6. The following is an Extended Reality (XR) device developed by a technology company. It uses advanced Augmented Reality (AR) and Virtual Reality (VR) technologies, combined with eye-tracking, gesture recognition and spatial audio, to provide users with an immersive interactive experience. The XR device allows users to operate applications, watch videos or conduct online meetings in virtual space without using a physical screen. Figure 1 to Figure 4 show usage scenarios of the XR device.

Figure 1
Using gestures to operate the virtual interface of the XR device

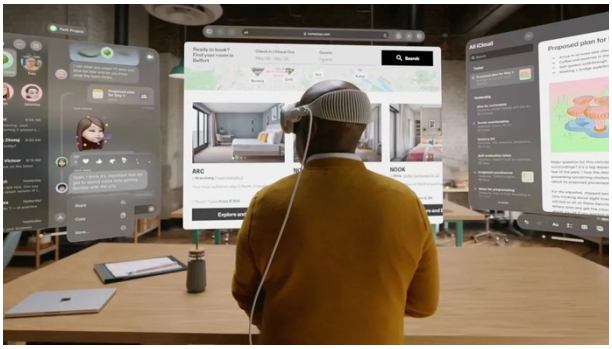


Figure 2
A rendered view of the virtual desktop workspace environment in the XR device

Figure 3
Designing through the XR device

Figure 4
A rendered view of watching immersive audiovisual content through the XR device

(a) Briefly describe and comment on the impact of the popularity of such XR devices on each of the following aspects. (4 marks)
① Design industry
② Medical and healthcare industry

(b) Write **two** applications of XR in the immersive audiovisual content shown in Figure 4, and explain how they stimulate the audience's senses to enhance the viewing experience. (4 marks)

(c) Suppose the XR device will be widely applied in school biology lessons. Students can carry out inquiry-based learning through virtual models, such as observing 3D models of human organs.

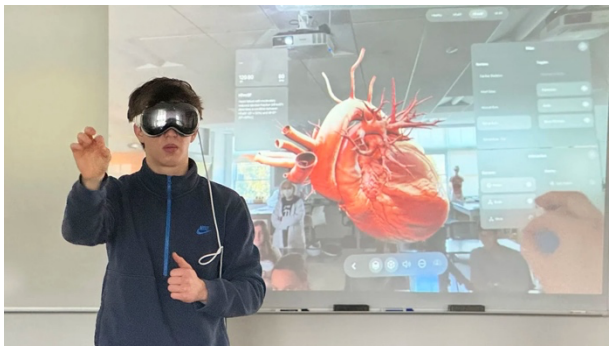


Figure 5
Using gestures to operate the virtual interface of the XR device

Figure 6
The interface displayed in the XR device

(i) Based on Figures 5 and 6, explain how students can interact through the virtual interface of the XR device to achieve the effect of scientific inquiry. (4 marks)

(ii) Using an annotated sketch, design a logo for the application "Interactive Science Classroom" to express its characteristics of interactive learning. (4 marks)

(iii) Give one rule of visual composition in the design in (c)(ii) and explain the visual effect created by the composition briefly. (2 marks)

(iv) Based on the logo in (c)(ii), use a set of three coloured annotated sketches to design an animated GIF to illustrate the functions of the "Interactive Classroom." (6 marks)

(d) State one hardware interface in Human-Computer Interaction (HCI). (1 mark)

End of Paper 2B

PAPER 2C Design Implementation and Material Processing

Candidate who choose this paper should attempt two questions from Q.7 – Q.9.
Answers to this paper should be written in the Answer Book provided.

7. The figure below shows a portable sketchbook storage case. Figure 1 illustrates the closed state of the case. Figure 2 shows the case in use after being opened, where the drawing board can be adjusted to three different angles. Figure 3 shows two lengths of the extendable bracket: the shortened state (Position 1) and the extended state (Position 2). Users can make stepless adjustments according to the size of the sketchbook.

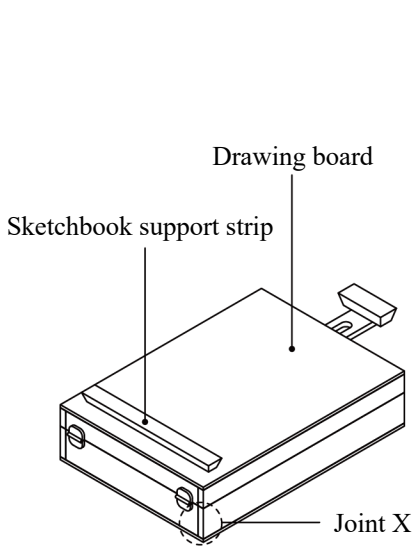


Figure 1

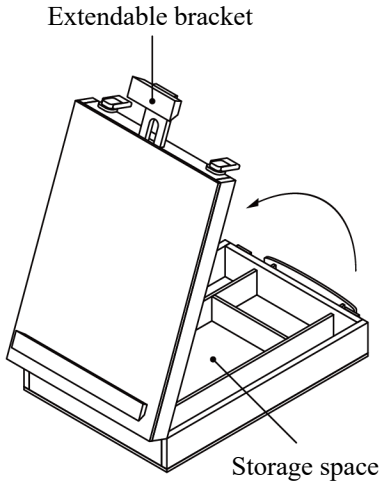


Figure 2

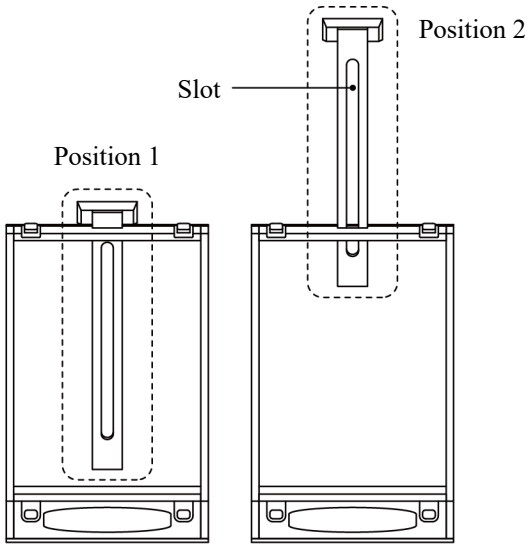


Figure 3

(a) (i) Suggest a type of hardwood suitable for making the storage case shell and give a reason for your choice. (2 marks)

(ii) State one suitable seasoning method for the hardwood suggested in (a)(i). (1 mark)

(iii) State **two** preparation processes that the hardwood surface needs to undergo before applying any finishes. (2 marks)

(b) Refer to Figure 1. Using annotated sketches, show a wood joint that is suitable to be used for Joint X. Name the joint. (3 marks)

(c) (i) State **two** reasons why manufactured board is a more suitable material than hardwood for making the storage case shell. (2 marks)

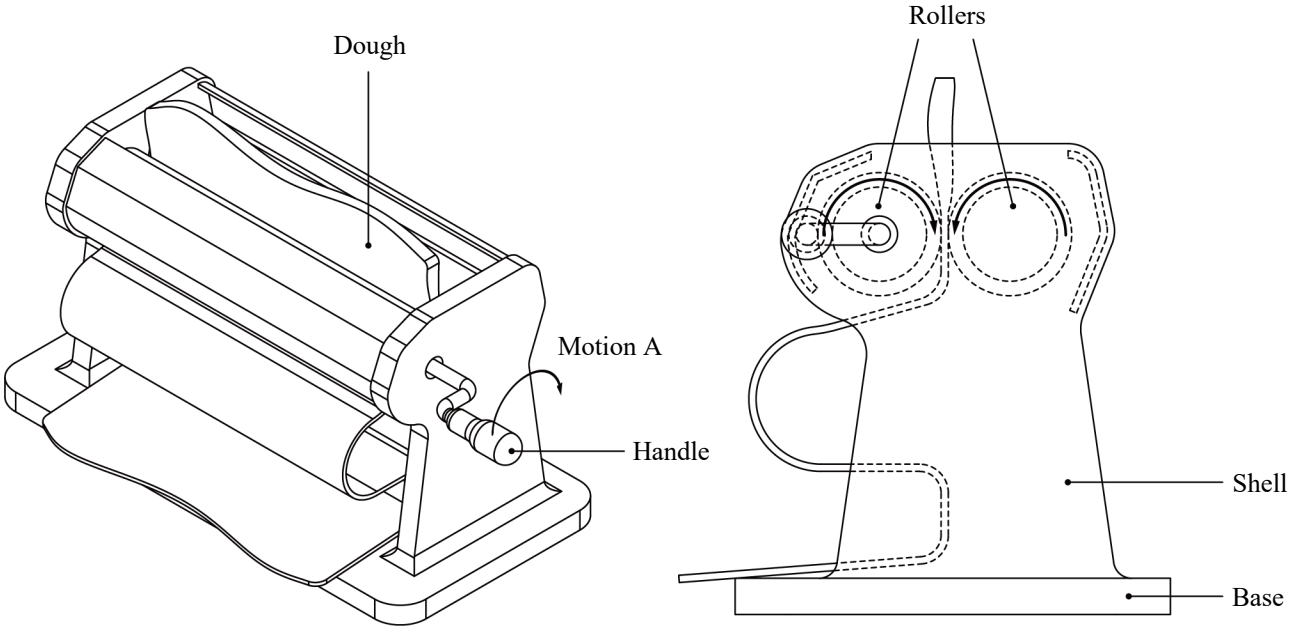
(ii) Suggest suitable manufactured board for making the storage case shell and state any **two** materials that comprise the board. (3 marks)

(d) Using annotated sketches, show a design that can hold the drawing board in three different angles, Illustrate its working principle. (4 marks)

(e) (i) Using annotated sketches, show how the slot on the extendable bracket is made using hand tools and/or powered tools. (4 marks)

(ii) Using annotated sketches, show a method that can make stepless adjustments to the extendable bracket from the position in Position 1 to Position 2, and to secure the extendable bracket in place. (4 marks)

8. The figure below shows a manual dough sheeter. When the handle is turned, the two rollers inside rotate in opposite directions, rolling in the dough and flattening it.



(a) Suggest a suitable non-ferrous metal for making the shell of the manual dough sheeter and state **two** related material properties. (3 marks)

(b) (i) Using annotated sketches, show the forming process of making the dough sheeter shell. (4 marks)

(ii) Name a semi-permanent joining method that is suitable for the dough sheeter shell and the base. (1 mark)

(iii) Using annotated sketches, show the steps of the semi-permanent joining method in (b)(ii) that can be performed in a school workshop. (3 marks)

(c) (i) Name Motion A. (1 mark)

(ii) When the handle is turned, the two rollers inside rotate in opposite directions. Using annotated sketches, shows the mechanism and working principle of the handle and rollers when the handle is turned. (4 marks)

(iii) Using annotated sketches, suggest a method to prevent leakage of lubricant from the mechanism stated in (c)(ii). (3 marks)

(d) Using annotated sketches, modify the design of the handle to increase its mechanical advantage when rotating. (2 marks)

(e) Using annotated sketches, suggest a design that can adjust for two different roller thicknesses and securely lock the selected thickness in place. (4 marks)

9. Figure 1 shows a sponge mop with a handle. Figure 2 shows a simplified diagram of the sponge mop. When the handle is pulled, water is squeezed out from the sponge.

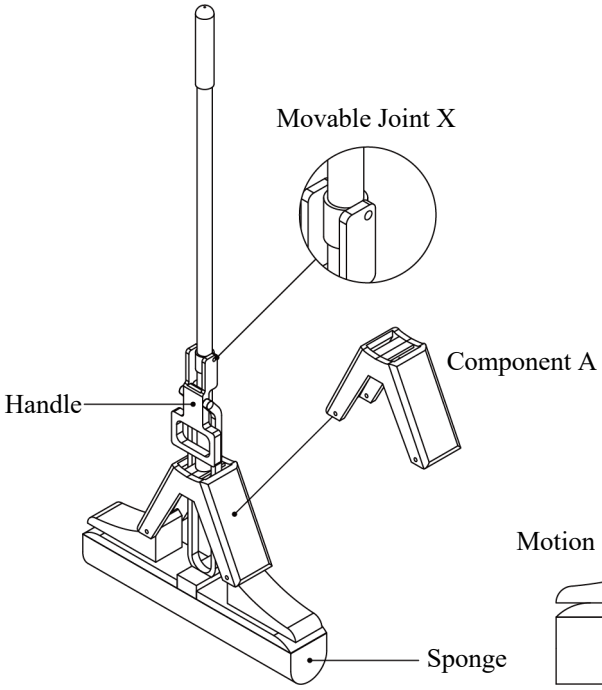


Figure 1

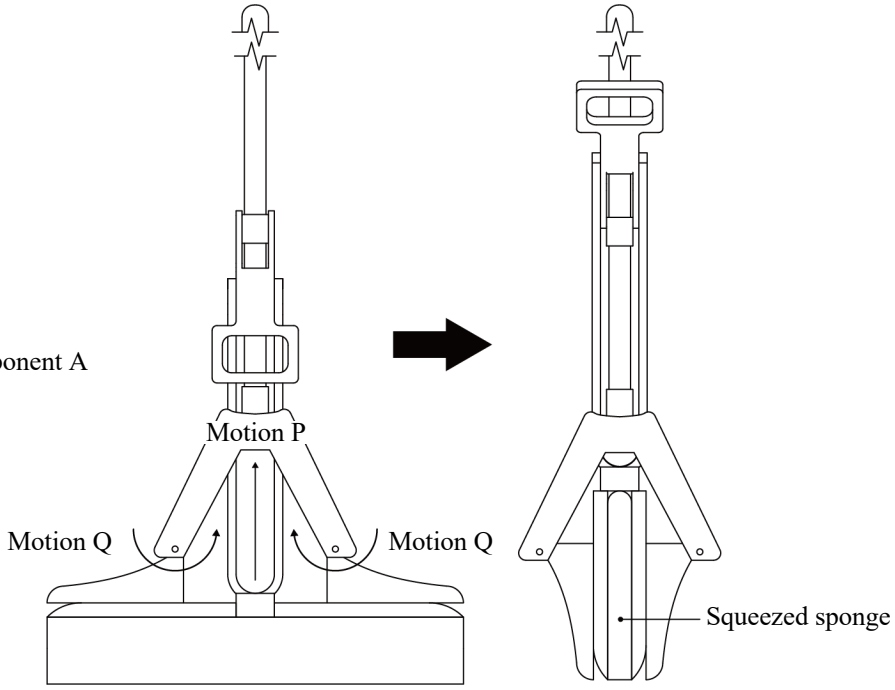


Figure 2

(a) (i) Suggest a suitable plastic for making Component A and state **two** related material properties that are suitable for Component A. (3 marks)

(ii) Name the mass production method for making Component A. (1 mark)

(iii) Using annotated sketches, show the forming process of the method suggested in (a)(ii). (4 marks)

(b) (i) Name motions P and Q. (2 marks)

(ii) Refer to Figure 2. Using annotated sketches, show the mechanism of the moving parts and explain its working principle. (5 marks)

(c) (i) Name a permanent joining method that is suitable for the movable Joint X. (1 mark)

(ii) Explain why the permanent jointing method is more suitable than the semi-permanent jointing method in this product. (2 marks)

(iii) Using a schematic diagram, show the position of the fulcrum, and both the positions and the directions of the effort and the load of the handle. Name the class of the lever. (5 marks)

(iv) Using annotated sketches, suggest a modified design that makes pulling the handle easier. (2 marks)

End of Paper 2C

PAPER 2D Electronics

Question 10-12 are not provided as no candidate sat the English version of this paper.

Sources of materials used in this paper will be acknowledged on the official website of Recurso (recurso.com.hk) at a later stage.