Question 28 — Multimedia Systems (20 marks)
Use a SEPARATE writing booklet.

(a) (i) In the context of multimedia systems, define *interactivity*. **1**

(ii) Describe the difference between linear and non-linear storyboards. **2**

(b) (i) Identify the characteristics of file formats that allow video content to be embedded into a web page. **2**

(ii) Describe a situation where path-based and cell-based animation could be used. **3**

(c) Interactive gaming systems incorporate the use of infrared and motion control technologies to simulate real-life movement. Recently numerous fitness games have been developed around a hardware device called a balance board. This device has inbuilt accelerometers which sense small shifts in a person's posture when standing on the board. This information is transferred through a wireless bluetooth link to the controller and processed so that the onscreen character mimics the user's movements exactly.

The sensors also provide data which allow the user to calculate their body mass index and measure their performance during an exercise activity.

In the skiing game, the user stands on the balance board to control their onscreen character as it skis downhill. The background scene is also animated, changing interactively depending on data coming from the board, providing the user with a virtual reality experience. The user's speed is calculated and displayed continuously on the screen. A progressive points score is also displayed depending on how the player negotiates sections of the course. Even the audio is interactive with the rushing sound changing as the player moves from side to side on the balance board.

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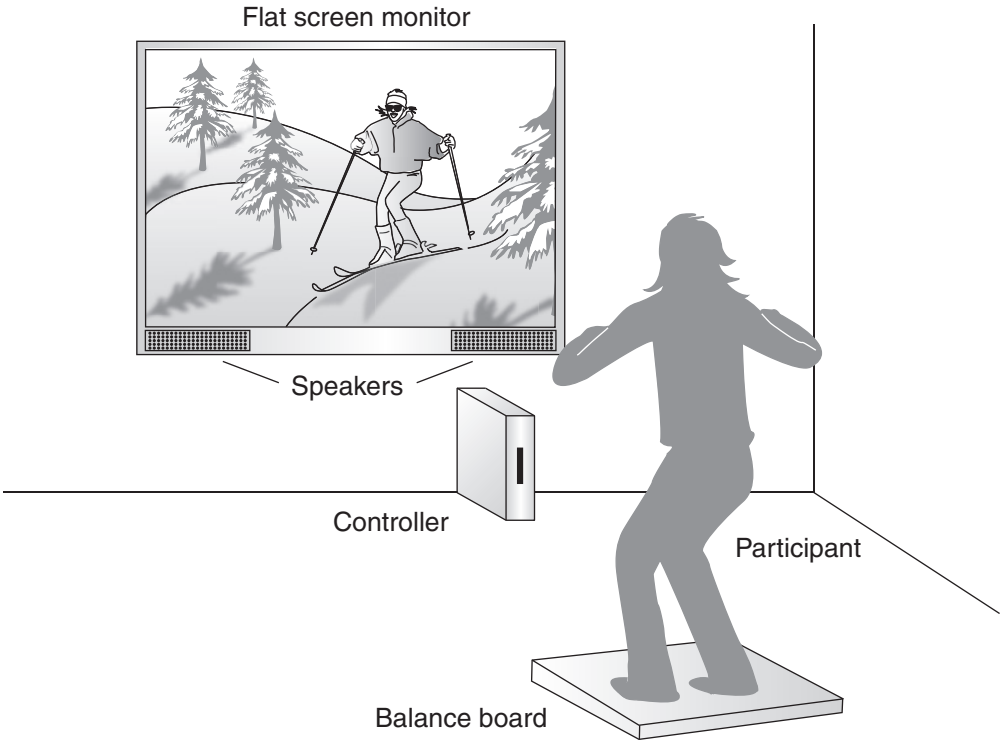
Question 28 (continued)



(i) Explain the need for data compression on the files storing the multimedia content in this game. **3**

(ii) Describe the collecting and displaying information processes of the interactive gaming system. **4**

(iii) Predict a future use of the technology used in this system. In your response, consider use of future multimedia systems and virtual worlds. **5**

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