Reading Passage 1

Computer Generation of Animated Characters

A Ask any young person to tell you the names of some famous movies and the chances are that many of those mentioned will be popular because of computer-generated special effects. Movies such as 'Star Wars', 'the Matrix' and 'Harry Potter' rely heavily on computers to create special fantasy and space effects. Others, such as the famous Lord of the Rings' movies, created surprisingly lifelike humanoid characters using sophisticated computer-generated techniques. The creative effort that lies behind these creatures is amazing. However, genuinely human‘ characters, indistinguishable from real actors, are still not quite possible, although we are getting very close to this elusive goal.

B The process of imagining and developing a computer-generated character is complex, involving many stages. The first stage is to design the look of the character, and to create a three-dimensional model on the computer. The model must be able to move in a realistic manner and, most importantly, its face must mirror human faces when it laughs, frowns or talks. One way to achieve this is by building a real skeleton of the model. After using lasers to scan the real model into the computer, controls are added that allow the bones and muscles to be moved around.

C This is where computer animation comes in. Because people are so conscious of how real' faces look, many detailed controls are needed on the computer to move the different features of the face. Up to a hundred may be needed to move the muscles of the face, so that the character's eyes, skin, mouth and other features all look natural to our eyes.

D After designing all of the components of the face and body, and the computer controls, the character is ready to move, or be animated. One way of achieving this is called motion capture, where a person acts out the character, and his movements are captured by video

camera and uploaded into the computer. Another way is key-frame animation, where, instead of modeling actions from a real person, the animators use the controls to move all of the parts of the body and face to create movement on the screen. These methods are often used together in creating an animated character; both of them are slow and painstaking, requiring hours of effort and planning.

E Enormous computer power is needed to make animation look real. For the ‘Lord of Rings', thousands of processors and numerous workstations were used to create all of the characters and special effects. There were up to 160 people working on computer graphics for these three movies, which took approximately 4million processing hours. It is estimated that the same process would have taken up to 200 years on a 4-gigahertz PC!

F However, despite all of this extremely sophisticated and expensive technology, creating a real human face is still a challenge for our animators. People are very sensitive to facial expressions. We can immediately pick if a face is not human, and we often have a strong reaction to this. The closer the face is to looking truly human, the more negative this reaction can be; this effect has been christened the ‘uncanny valley‘ by Japanese roboticist* Masahiro Mori. However, he also suggests that once the animation gets close enough to the real thing, we begin to feel positive about it once more. So, maybe future Tom Cruises or Lindsay Lohans will be computer generated, and we will never know the difference.

*an expert on design, construction and use of robots

Questions 1-6

Look quickly at the passage and write down the letter of the paragraph which contains the following information.

1._____ Masahiro Mori
2._____ Key Frame animation
3. _____160
4. _____Star Wars
5. _____Three-dimensional
6. _____A hundred

Questions 7-12

Now match the information to the correct information and write the letters beside accordingly.

7. _____ Masahiro Mori
8. _____ Key Frame animation
9. _____ 160
10. _____Star Wars
11. _____Three-dimensional
12. _____A hundred

a. Movie name
b. Name of a person who works with robots
c. Number of people working on a project
d. Computer technique
e. Number of computer controls
f. Computer model

Questions 13-19

The passage has 6 paragraphs, A-F. Which paragraph contains the following information? Write the correct letter, A-F, beside the statements below.
NOTE: You may use any letter more than once.

13._____ A description of motion capture
14._____ Lindsay Lohan of the future
15._____Negative response to human-like expressions
16._____Processing hours needed
17._____Special effects make films popular
18._____Creating a bone structure using lasers and adding controls
19._____100 muscle controls

Answer keys:

1. F
2. D
3. E
4. A
5. B
6. C
7. b
8. d
9. c
10. a
11. f
12. e
13. D
14. F
15. F
16. E
17. A
18. B
19. C