(a) Describe three common input devices that might be difficult for a disabled person to use. In each case, state clearly why the specific disability would cause a problem. [6 marks]

(b) Outline two disabilities that could be helped through the use of voice recognition. [4 marks]

(c) Explain why saving a file to the hard-disk would be especially difficult for a blind person, even though an audio speaker is available. [3 marks]

(d) Describe the roles of the following components for an Electronic Reading Aid which converts printed text into spoken sounds, to help a visually impaired user:

† Scanner CPU Hard-Disk [6 marks]

(e) Describe a situation where color-blindness could cause problems when using the World-Wide-Web. [2 marks]

(f) With reference to the speech recognition engine presented on page 15 of the Case Study:

(i) Explain the need for analog-to-digital conversion. [3 marks]

(ii) Outline some of the CPU intensive processing required in the Speech Recognition module. [3 marks]

(g) Discuss the reliability issues associated with using speech recognition for controlling wheel-chair movements. [3 marks]

(h) A note-taking system consists of a pocket-sized computer with a microphone. The user can talk into the microphone and the computer records the voice (without performing any speech recognition). The device uses an audio sampling rate of 64 Kilobits per second.

(i) Estimate the total storage space required for 1 hour of voice input. State your answer in MegaBytes. [3 marks]

(ii) Discuss the feasibility of saving 10 hours of voice input on a hard-disk drive in this device. [3 marks]

(i) Describe how plug-and-play technologies improve the accessibility of computing devices for disabled people, including at least one specific example. [4 marks]
1. State the different types of physical disabilities when using a computer. (1)

2. Define the term “colour blindness” and state its relation to technological disabilities. (2)

3. State some of the guidelines that the World Wide Web Consortium has set in order to promote web accessibility. (1)

4. Identify hardware pieces that provide an option for someone with a vision/sight disability. (2)

5. Discuss the properties and characteristics of such devices. (3)

6. Suggest an optional device that could be of use to a person with vision/sight disabilities. (4)

7. Determine the input and output devices that present certain issues to people with physical disabilities. (4)

8. Evaluate some of the problems the suggested automatic computer generated 3D animated Signed English might have. (3)

9. Explain how biometric control devices can be used when dealing with touch/dexterity disability. (3)

10. Identify the alternative input methods that could be used by a person that already cannot operate special input devices. (2)

1. State 3 solutions for the visually impaired.

2. Outline how voice recognition software could help disabled users.

3. Describe how Braille oriented keyboard and screen could help users.

4. State and explain a solution for the hearing disabled.

5. Explain a problem with the OCR scanner for the hearing impaired would have.

6. State three disadvantages and 3 advantages that a video magnifier could have against a normal monitor.

7. Outline a complete computational station designed for someone who lacks upper limbs.

8. State three alternate input devices for disabled users.

9. Discuss the advantages and disadvantages of an application which translates sign language into text and vice versa.

10. State one aspect of a website that has to be carefully developed in order to make it more accessible for disabled users.
1) State two problems facing people with touch/dexterity problems. [2]

2) Discuss the state and discuss the two problems associated with switch based input devices. [4]

3) Discuss and analyze the need for interpretation devices which convert sign language into a spoken language and vice versa. Present a possible solution for the problem at hand. [6]

4) State two advantages presented by voice recognition technologies for the physically disabled. [2]

5) Apart from switches and voice recognition devices, state one alternative input device which can help the physically disabled. [1]

6) Discuss the need for ergonomically designed input devices and state how these devices could help reduce personal injury due to sustained physical stress. [3]

7) When designing a web page, web designers are faced with several user friendliness issues which could impede the physically disabled from accessing it.
   a. State the two main disabilities which limit access to web pages. [2]
   b. Describe how web designers are going about to avoid such problems. [3]

8) Discuss how note takers could aid people with disabilities and state their possible disabilities. [4]

9) We often discard olfactory dysfunction as a disability due to its rarity. People with olfactory dysfunction are usually exposed to dangerous gases and substances that are not identified due to the lack of smelling ability. Discuss and explain how technology could be used to prevent the exposure of the disabled to certain dangerous situations. [6]

10) State the main input and output devices used to integrate the visually disabled into society. State the name of the language used by the visually challenged. [3]
1) State two problems facing people with touch/dexterity problems. [2]

2) Discuss the state and discuss the two problems associated with switch based input devices. [4]

3) Discuss and analyze the need for interpretation devices which convert sign language into a spoken language and vise versa. Present a possible solution for the problem at hand. [6]

4) State two advantages presented by voice recognition technologies for the physically disabled. [2]

5) Apart from switches and voice recognition devices, state one alternative input device which can help the physically disabled. [1]

6) Discuss the need for ergonomically designed input devices and state how these devices could help reduce personal injury due to sustained physical stress. [3]

7) When designing a web page, web designers are faced with several user friendliness issues which could impede the physically disabled from accessing it.
   a. State the two main disabilities which limit access to web pages. [2]
   b. Describe how web designers are going about to avoid such problems. [3]

8) Discuss how note takers could aid people with disabilities and state their possible disabilities. [4]

9) We often discard olfactory dysfunction as a disability due to its rarity. People with olfactory dysfunction are usually exposed to dangerous gases and substances that are not identified due to the lack of smelling ability. Discuss and explain how technology could be used to prevent the exposure of the disabled to certain dangerous situations. [6]

10) State the main input and output devices used to integrate the visually disabled into society. State the name of the language used by the visually challenged. [3]

Compiled by Chris Ruffer

1. State the five senses. (1)

2. State two kinds of note-taking systems. (1)

3. Describe a key problem with using sign language. (2)

4. Describe a usability issue on the World Wide Web for people who have a vision/sight disability. (2)

5. State and describe the three types of disability. (3)

6. For people who have touch/dexterity disabilities outline tow alternative input methods for using a computer. (3)

7. For those who have a vision/sight disability suggest a solution to assist them in reading. (2)

8. Describe the function of the World Wide Web Consortium? (1)

9. Suggest a solution in assisting deaf people to communicate with other people. (3)

10. State and explain 3 disadvantages for people with disabilities using current computer systems that are designed for the ‘normal’ user. (4)