

Paper Reference(s)

6959/01

Edexcel GCE

Applied Information and Communication Technology

Unit 9: Communications and Networks

7–25 January 2008

Assessment window 3 weeks

Time: 10 hours

Materials required for examination

Short treasury tag

Items included with question papers

Cover sheet

Instructions to Candidates

Complete your candidate details on the cover sheet provided.

At the end of each session you should hand your materials in to your teacher.

All tasks must contain your name, candidate number, centre number and activity number.

At the end of the examination use a treasury tag to attach your printouts to Page 2 of the cover sheet in the correct order as shown.

Information for Candidates

There are **six** activities in this examination totalling **88** marks. **2** further marks are allocated to standard ways of working giving a paper total of **90** marks.

The marks for parts of the activities are shown in round brackets: e.g. **(10)**.

There are suggested timings against each activity: e.g. **(15 minutes)**. It is up to the candidate to decide how much of this is for research and how much is for evidence production.

A maximum of **five** hours can be spent on evidence production.

Advice to Candidates

Read the Scenario carefully.

Work through the activities in order.

Attempt **ALL** activities.

Label your printouts clearly as instructed.

Printing must be undertaken within the examination period.

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Turn over

Scenario

Bronco Brian Gunn

Bronco Brian Gunn grew up in the fifties at the height of the Western films' popularity. Brought up on John Wayne films and television programmes like the Lone Ranger, he became fascinated by the Wild West. At the age of ten he joined the Billericay Wild West Club that boasted forty-five members. Bronco Brian's crowning moment was when he won the World Quick-Draw Tournament in 1976 after being National Champion for eight consecutive years.

Inevitably Bronco Brian's working life was going to be connected in some way with the Wild West. Consequently on leaving school he opened the first of his fast-food restaurants in Billericay. The "Bronco Brian's Burger & Beans Bars" chain of restaurants is now country wide and has over 150 outlets.

At the age of 60 Bronco Brian diversified into property development, especially theme parks. He opened his first theme park in Burnham-on-Crouch and has opened four others since. He has plans to open five more.

To cope with the expanded business, a new company was founded known as BBG. Unfortunately Bronco Brian's headquarters, The Chuck Time House, on the Billericay Business Park, was now too small for his expanded business. He has handed over the running of the restaurant chain to his son and daughter (Slim & Calamity) who remain in The Chuck Time House, while Bronco Brian has moved into a similar building, The Ranch House, on the same Business Park but 1 km away. The two buildings both have three floors and will need new networking facilities.

The Chuck Time House

In The Chuck Time House the ground and first floors are open plan. The top floor contains offices for Slim & Calamity and an office shared by their personal assistants. The assistants will both have their own PC but share a printer. Slim & Calamity will have their own laptops which will also connect to the network. There is also a boardroom/conference room which will have a standalone computer and interactive whiteboard for presentation purposes.

The first floor contains the Finance Department which consists of a manager and five assistants who will each have their own PC. There will be one printer for this department. The Marketing Department is also on this floor and consists of a manager and three assistants. They will each have a high specification computer with its own printer. A high quality colour laser printer for promotional work will be shared between them.

Half the ground floor is taken up by a reception and lounge area. The reception desk is always staffed during office opening times. There is one receptionist on duty who will have a PC and printer. The IT technicians area and server room will be housed behind the lounge area.

The Ranch House

On the top floor of The Ranch House is the corporate boardroom, Bronco Brian's office and his secretary's office. Bronco Brian and his secretary will each have a PC and printer.

On the first floor is the Corporate Finance Department and the property managers. The Corporate Finance Department has a manager and three assistants who will each have a PC. There will be one printer for this department. The four property managers will each have their own laptop which will need to connect to the network. There will be one printer for this section.

On the ground floor is a small reception area and an office for a web designer. The receptionist and web designer will each have their own PC and printer. Also on this floor is the Human Resources Department and the Legal Department. In the Human Resources Department there is one manager and two assistants. Each will have their own PC but will share a printer. The manager of the Legal Department prefers to use his own laptop which will need to be connected to the network. His two assistants will each have their own PC. There will be one printer for this department.

Your project

Bronco Brian Gunn's empire has an old mainframe system which was installed back in the 1970s. Now he has moved to a new building he wants a complete review of his computing facilities. You have been brought in as a network consultant to advise and help implement the installation of a new network for The Chuck Time House and The Ranch House.

All word processed documents must have a header and a footer. The header must contain the activity number. The footer must contain your name, candidate number and centre number.

Minimum font size of 10 should be used in all word processed documents using a font size suitable for business purposes.

Diagrams should be large enough for the detail to be read.

Activity 1 – Benefits of networks (suggested time 1 hour 30 minutes)

You have been asked to advise Bronco Brian Gunn on the benefits of networking in terms of both cost savings and improved productivity.

- Produce a document for Bronco Brian discussing the benefits of networks.

Networks vary in size and complexity. LANs, MANs and WANs are terms used to group network types. Bronco Brian has heard of these terms but has no idea what they mean.

- Produce notes to explain to Bronco Brian the different types of networks, using examples of all network types
- Recommend and justify the network type you think is most suitable.

Evidence to be submitted

No more than **three** word processed A4 pages:

- Document to Bronco Brian discussing benefits of networks
- Notes describing characteristics, properties and uses of different types of networks
- Recommendations on which type of network to install.

(Total 12 marks)

Activity 2 – Components of a network (suggested time 1 hour 45 minutes)

Computer networks are made up of hardware devices, software and media.

Bronco Brian has asked you to design an appropriate network solution for both The Chuck Time House and The Ranch House:

- Produce a document explaining the quantity, the function and costs of all components to be used in your design, the types of transmission media used to connect the devices together and the software requirements
- Justify your choice of components giving possible alternatives if costs need to be reduced.

Slim and Calamity have some networking knowledge. They have suggested that Bronco Brian links the two buildings using fibre optic cable.

Bronco Brian has asked you to:

- Advise him on the use of fibre optic cable and two other methods of connecting The Chuck Time House to the network of The Ranch House
- Recommend the most suitable method of connection.

Evidence to be submitted

No more than **three** word processed A4 pages:

- A list of all the components, transmission media, connections and software to be used
- Notes explaining the purpose of each item and justifying your choices
- A list of possible alternatives that may be used if reducing the expenditure is necessary
- Notes describing the different methods of connecting The Chuck Time House to the network of The Ranch House
- Your recommendation as to which method of connection is most suitable.

(Total 17 marks)

Activity 3 – Network design (suggested time 2 hours 15 minutes)

Having investigated the various options, you now need to design an appropriate network solution for both The Chuck Time House and The Ranch House.

- Use network design software to produce the logical network design for the complete project
- Explain and justify any decisions that you have made regarding the positioning of network devices and equipment.

Evidence to be submitted

No more than **three** A4 pages:

- A one page design for The Chuck Time House network
- A one page design for The Ranch House network
- One** page of word processed notes justifying each major decision made about the network design.

(Total 23 marks)

Activity 4 – IP addressing (suggested time 1 hour)

In order to communicate with each other, each network device must be uniquely identifiable.

- Draw up a scheme for implementing IP addresses across the network indicating the actual IP addresses to be used assuming a Class C private network address
- Explain and justify your decisions.

Evidence to be submitted

One word processed A4 page:

- A scheme for IP addressing with an indication of the actual IP addresses to be used
- Notes justifying each major decision made with regard to the IP addressing scheme.

(Total 9 marks)

Activity 5 – Network performance (suggested time 1 hour)

Once the two networks have been connected there is a noticeable performance degradation.

- You have been asked to advise Bronco Brian on possible methods to improve the network performance.

Evidence to be submitted

One word processed A4 page:

- Notes discussing possible causes of performance degradation
- Notes recommending possible remedial action.

(Total 9 marks)

Activity 6 – Network management (suggested time 2 hours)

You have advised Bronco Brian that a network of the proposed size requires a network manager. Bronco Brian is not sure of the type of person he needs for this role nor what duties they would be expected to undertake.

- Write the job description for the role of network manager.

Evidence to be submitted

No more than **two** word processed A4 pages:

- Detailed job description listing the duties that would need to be performed to keep the network running efficiently.

(Total 18 marks)

(Standard ways of working: 2 marks)

TOTAL FOR PAPER: 90 MARKS

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