

# Edexcel GCE

## Applied Information and Communication Technology Unit 9: Communications and Networks

14 May – 1 June 2012

**Assessment window 3 weeks**

**Time: 10 hours**

Paper Reference

**6959/01**

### You must have:

Short treasury tag, cover sheet

### Instructions

- Complete your candidate details on the cover sheet provided.
- All printouts must contain your name, candidate number, centre number and activity number.
- At the end of the examination:
  - all printouts should be placed in the correct order.
  - use a treasury tag to attach your printouts (**as shown**) to Page 2 of the cover sheet.

### Information

- The total mark for this paper is 90. There are **five** activities in this examination totalling 88 marks. **2** further marks are allocated to Standard Ways of Working.
- The marks for **each** question in an activity are shown in brackets
  - use this as a guide as to how much time to spend on each question.
- Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed
  - you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

### Advice

- Read through 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.

Turn over ►

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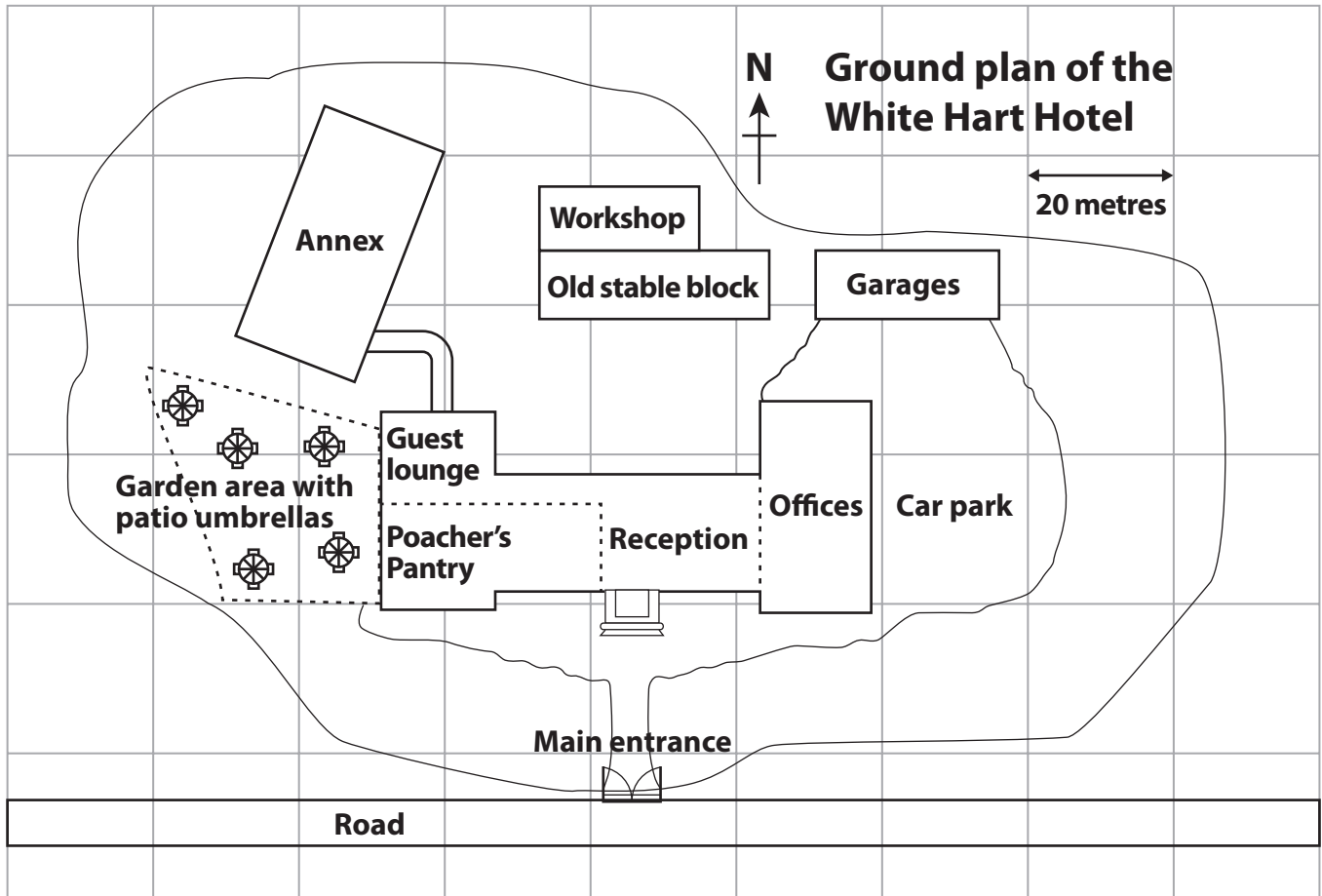
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## Scenario

### The White Hart Hotel

The White Hart is a sixty-bedroom hotel. It has been losing money for the last few years. Although the hotel has few residential guests, its Poacher's Pantry bar and restaurant is popular with local people and has been subsidising the rest of the hotel.

The hotel is based on a 15th century manor house with an assortment of outbuildings. There is also a modern bedroom annex, connected to the manor house by a covered walkway. The ground plan is shown in the sketch map.



The garages, stable block and workshop are single storey buildings. The annex has three storeys, with 20 bedrooms on each floor.

The main building has two storeys. The ground floor layout is shown on the plan. The first floor is divided in two. The eastern part is the owner's apartment and the western part is an open space, which is used as a function room. The two parts are separated by a hallway with a staircase running down to the reception area.

The White Hart has recently been purchased by Richard and Anne Woodstock. The Woodstocks have been managing hotels and restaurants for many years but this is their first time as owners.

The main building retains features from the 15th and 16th centuries. It is Grade II listed, which means that there are restrictions on making alterations to the building. The outbuildings and bedroom annex are not listed, but any new buildings or extensions of existing ones would require an archaeological survey. The potential costs involved have deterred previous owners from making changes. Richard and Anne are aware of the issues involved and intend to keep to the current ground plan and avoid anything that involves digging.

The Woodstocks want to change the nature of the business by reducing the number of hotel bedrooms and creating a business and conference centre. The ground and first floor bedrooms will be replaced by five meeting rooms on each floor. They also want to include outdoor dining facilities for the Poacher's Pantry. You are the IT consultant for the project.

The Woodstocks have used a wide range of office and specialist hotel management systems, but have always been able to call on company IT staff to deal with any problems. Now that they have their own business, they want to have a working knowledge of any systems that are installed so that they can fix minor problems themselves.

## Instructions to Candidates

All 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.

A minimum font size of 10 should be used in all word processed documents, using a font type suitable for business purposes.

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

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### **\*Activity 1 – Network connectivity (suggested time 1 hour and 30 minutes)**

The previous owners have told Richard and Anne that the WiFi router in the owner's apartment has a FON capability. Richard understands that this is something to do with providing public and private hotspots with a single router.

The Woodstocks are interested in the idea of giving internet access to customers of the Poacher's Pantry.

Richard asks you if the FON system or something similar might be appropriate. He wants advice on these topics:

- legal aspects
- equipment requirements
- ability to cover the required areas
- security.

### **Research the technology and produce a briefing document for Richard that:**

- is written in non-technical language
- includes one or more explanatory diagrams
- is set in the context of the scenario
- presents, with reasons, your conclusions about the suitability of a FON system for the scenario given.

Pay particular attention to the quality of your written communication.

### **Evidence to be submitted**

On **one** word processed A4 page, a briefing document for Richard.

**Marks will be awarded for the Quality of your Written Communication.**

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**(Total for Activity 1 = 12 marks)**

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**Activity 2 – Network management, planning, budgeting, configuration**  
(suggested time 2 hours and 15 minutes)

Anne is controlling the project budget. At a meeting with her you agree that each of the ten meeting rooms in the business and conference centre must have:

- cable and WiFi connections
- a data projector
- a sound system
- an interactive whiteboard or similar technology
- network access for computers capable of operating the other items
- a computer capable of operating the other items.

(a) Anne has a limited budget. She is aware that cheap IT systems may not perform as well as more expensive versions.

(i) Produce the cheapest possible solution for **one** meeting room. (6)

(ii) Produce a second solution that spends more on those items that will give a longer useful lifetime and/or an improved customer experience. The maximum budget for this solution is £3000 and you must justify your decisions. (11)

(b) Clients booked into more than one meeting room must be able to exchange data over the network. Anne has to ensure that other clients, who are not part of that group, cannot intercept that network traffic.

Anne asks you to explain a method of achieving this. (5)

**Evidence to be submitted for (a)**

On **one** word processed A4 page:

- a table showing the cost of devices for the cheapest solution
- a table showing a second solution for £3000 or less, with decisions justified.

**Evidence to be submitted for (b)**

On **one** word processed A4 page:

- an explanation of how interception of network traffic can be prevented.

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**(Total for Activity 2 = 22 marks)**

### **Activity 3 – Network components (suggested time 1 hour and 15 minutes)**

At a further meeting with Anne you agree on these points.

1. The Woodstocks' present ISP will install a suitable system for the Poacher's Pantry and garden area. You need only allow for a cable connection to the system.
2. The reception area will need a PC and a suitable black and white printer for producing invoices, etc.
3. A small IT office will be made in the present reception area. This will house the server and other network equipment.
4. Anne accepts your solution from Activity 2(a)(ii) and will use it in the meeting rooms and conference halls.
5. The present function room will become a dedicated conference hall. It will require sufficient data connections.
6. The offices will be converted into a dual purpose conference hall/function room. It will require sufficient data connections.
7. Richard and Anne will make an office area in their apartment for business administration. They will need a PC each and will share a colour laser printer. The printer must be capable of printing 1000 duplex pages per day.
8. 20 bedrooms will be retained on the top floor of the annex. Each of the other floors will have five meeting rooms. They will require sufficient data connections.
9. The present stables and workshop will be converted into a new dining area and bar for use by customers of the business and conference centre. This will require a data point for a Point of Sale (POS). The POS will be supplied by a specialist company.
10. The owner's apartment already has three data connection points. This is sufficient but they will need connecting to the new network. Any other network infrastructure in the hotel will be replaced.
11. A credit card company will supply WiFi smart card readers and base units. There will be two in the Poacher's Pantry and one in reception. The base units will each need a cable connection.
12. Any area that might reasonably be used by customers of the business and conference centre needs to have WiFi coverage.

Produce a table for Anne which identifies the hardware and cabling components to be used in the entire system, giving a reason for each component.

Do not include the networked projectors, sound systems, smart whiteboards, or the computers in the meeting rooms and conference halls. These are credited in Activity 2.

Do not include the ISP's devices for the Poacher's Pantry, the Point of Sale system, smart card readers, or smart card base units. These are being supplied by other companies.

### **Evidence to be submitted**

On **one** word processed A4 page:

- a table for Anne which identifies the hardware and cabling components to be used in the system, giving a reason for each component.

**(Total for Activity 3 = 14 marks)**

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### **Activity 4 – Network design (suggested time 3 hours)**

Having talked to Anne about her requirements and investigated the possible options, you now need to design an appropriate network solution for the hotel.

- (a) Use network design software to produce a network design for the complete project.

NOTE. You should only show devices in **one** meeting room or conference hall. The other rooms/halls only require the network connections to them to be shown.

(18)

- (b) Write notes justifying each major decision you made with regard to the network design.

(6)

### **Evidence to be submitted for (a)**

On **one** A4 page of computer output:

- your network design.

### **Evidence to be submitted for (b)**

On **one** word processed A4 page:

- notes justifying each major decision made with regard to the network design.

**(Total for Activity 4 = 24 marks)**

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### Activity 5 – Network protocols (suggested time 2 hours)

The Woodstocks will be hiring a network technician, but Richard wants to be able to deal with minor problems when the technician is not at work.

Richard wants to be able to operate the server remotely, both from a PC in his apartment and from his laptop while he is away from the hotel. He does not want a solution that requires someone to set up a link from the server end whenever he needs to connect.

He asks you for some advice.

(a) Produce advice for Richard.

- (i) Describe **two** methods by which Richard can operate the server remotely from his PC. (6)
- (ii) State, with reasons, which method would be most suitable for him to use. (2)

(b) Prepare a document for Richard.

- (i) Describe **one** method by which Richard can operate the server remotely from his laptop whilst away from the hotel. (4)
- (ii) Explain the role of the router in handling IP addresses and ports when making the connection. (4)

#### Evidence to be submitted for (a)

On **one** word processed A4 page:

- a document for Richard describing two remote operation methods, with a recommendation of the one that would be suitable.

#### Evidence to be submitted for (b)

On **one** word processed A4 page:

- a document for Richard describing one remote operation method and the role of the router.

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**(Total for Activity 5 = 16 marks)**

#### Standard Ways of Working.

**All printouts must contain the activity number, your name, candidate number and centre number.**

**Pages must be securely fastened to the cover sheet and in the correct order.**

**Minimum font size of 10 should be used for all word processed documents**

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**(Standard Ways of Working = 2 marks)**

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**TOTAL FOR PAPER = 90 MARKS**