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A2 GCE
APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

G055/01/IC Networking Solutions

INSTRUCTIONS FOR CANDIDATES

JUNE 2014

PRE-RELEASE MATERIAL AND TASKS

10909157727

INFORMATION FOR CANDIDATES

- This document consists of **8** pages. Any blank pages are indicated.

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NOTICE TO CANDIDATES

The work you submit for these pre-release tasks must be your own.

- If you copy from someone else or allow another candidate to copy from you, or if you cheat in any other way, you may be **disqualified** from at least the subject concerned.
- You must always keep your work secure and confidential whilst you are preparing it. **If it is stored on the computer network, keep your password secure. When printing work, collect all copies from the printer and destroy those you don't need.**
- Any materials (eg books, information from the internet you have used to help complete this work) must be clearly acknowledged in the work itself.

- All work must be submitted to your teacher once completed. Ensure you include your name, candidate number and centre number on all pages and that each page is hole punched in the top left-hand corner.
- **You must not submit any materials other than your response to the pre-release tasks.**
- When you hand in your completed tasks, you will be required to sign that you have understood and followed the regulations.
- Your work will be returned to you at the start of the exam, in the exam room. At the end of the exam, you must attach **all** tasks to your question paper using a treasury tag.

ALWAYS REMEMBER

YOUR WORK MUST BE YOUR OWN

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PRE-RELEASE TASKS – INSTRUCTIONS FOR CANDIDATES

Read the attached case study and these instructions carefully, then carry out the tasks detailed below. There are two types of task.

In Task 1 you will produce notes that will help you to answer questions in the examination for this unit. The other tasks will be marked and will contribute up to 30 of the 100 marks available for this unit.

You will need your completed tasks when you take the examination for this unit.

The work produced in response to the pre-release tasks must be submitted to your teacher when it is completed. The work must be presented as a hard copy.

It is not acceptable for you to copy large parts of material from other sources as the tasks require you to apply your knowledge to the case study. Any books, information leaflets or other materials (eg videos, software packages or information from the internet) which you have used to help you complete this work must be clearly acknowledged in the work itself. To present material copied from books or other sources without acknowledgement will be regarded as deliberate deception.

You **must not** submit any material other than your response to the pre-release tasks.

The work must be collated so that it is presented in task order.

Each page of the work must be marked clearly with your name, centre number and task number.

When you have completed the tasks you must sign and date a Candidate Authentication Statement. You must then ask your teacher to sign to confirm that the work is your own.

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CASE STUDY

OES is a new organisation that is opening a training centre in a large city. The layout of the OES training centre is shown in Fig. 1. OES intends to provide computer-based health and safety courses, which lead to a nationally recognised qualification. Students will take the courses at the training centre where they will be taught in groups of up to ten. The computer-based learning materials will be interactive and accessed from an intranet using a web browser. The materials will be in a range of different formats, including PDF, and will require public domain software to use them.

All students will need to do extra research by accessing other interactive websites. This means that internet access is required for students at the training centre. Students may be set tasks for homework and will need to be able to submit these tasks by email. The final assessment of all courses will be an online test that can only be taken at the OES training centre.

OES will employ a team of 20 staff who will be responsible for general administration, maintenance of IT equipment, and development and delivery of the computer-based courses. All staff will work in one open plan office space in which there will be a dedicated room for all network IT equipment.

The initial recommendations for the network are:

- install a network of 50 workstations
- divide the network into two subnets: a student subnet with 30 workstations, ten in each of three classrooms; and a staff subnet with 20 workstations and the servers. Each subnet must allow for extra computers to be added to the network without the need for any new network connecting devices
- include an internal web server which will host the computer-based course materials
- include a mail server to deal with email accounts for staff and students
- include one file server for each subnet. The file server for the student subnet will provide storage for student work files and assessments. The other file server will provide storage for company employees
- there will be four network printers, one in each classroom and one in the main office area
- the network will be connected to the internet and a proxy server will manage internet access for all workstations
- all workstations will run operating systems compatible with those on the servers
- the design will follow a tree topology.

In the near future, OES wants to expand its services to allow students to take computer-based courses and final assessments remotely.

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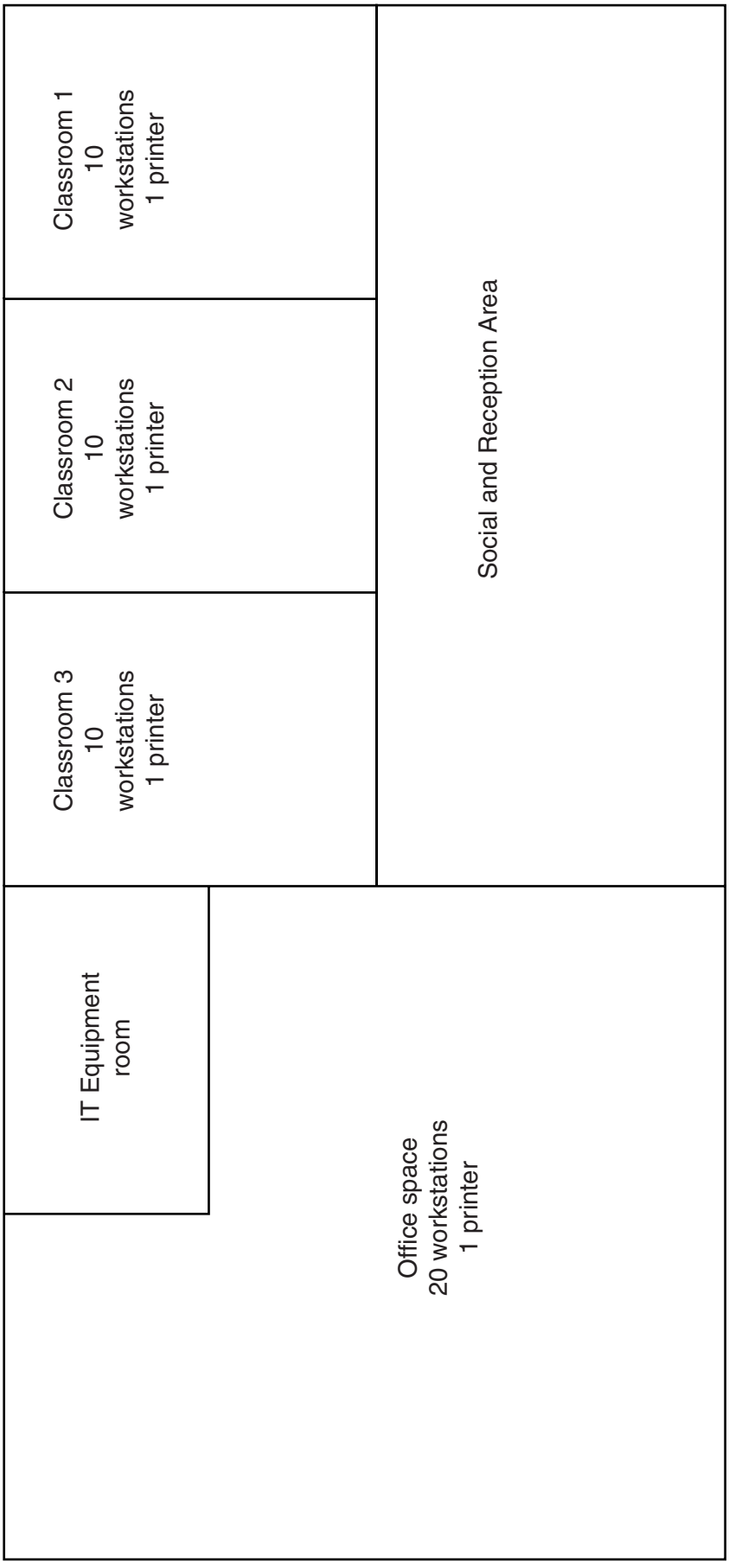
Classroom 1
10
workstations
1 printer
Classroom 2
10
workstations
1 printer
Classroom 3
10
workstations
1 printer
Social and Reception Area
IT Equipment
room
Office space
20 workstations
1 printer

Fig. 1

Task 1

The initial recommendations have been accepted and you will now go ahead with the network design. To help prepare for this, and to gain a fuller understanding of the network requirements you will do some research.

Make some notes that can be used to help inform future decisions about the network design. Your notes should include:

- how the company might use their network to take full advantage of the benefits of networking
- the different types of transmission media, connectors, connecting devices and broadband connection methods that might be used in this network, the function of each, and where and why each is needed in the network
- the types of software, including public domain software, that might be required for the network
- the range of topologies that could be used, their benefits, limitations and suitability for this network
- the possible uses of the three types of server to be included in the network, what each server will do, how each can be set up and how each will be protected from the various security issues that might arise
- the WAN services that the company will use and provide, including the benefits and limitations of these services and the protocols needed
- the security measures that the company should take to protect its data and equipment
- the benefits and limitations of expanding the OES services to allow students to take computer-based courses and final assessments remotely.

Task 2

The new network will require specialised network software. This software will be installed on servers and workstations throughout the network.

Produce a table, as shown below, in which you list **three** types of network software required for this network. For each, complete the table using the headings shown.

Type of network software	Purpose	Explanation of the purpose	Where installed	Number of copies required

[18]

Briefly evaluate the method(s) you used to carry out this task **[3]**

Task 3

OES has decided to have a fully cabled tree network using the latest Ethernet technology which can transmit data at speeds up to 1000 Mbs.

Discuss the equipment required for this type of network and the consequences for OES of **not** having the correct equipment.

The work you produce for Task 3 **must not** exceed 250 words and you must include a word count.

The quality of your written communication will be assessed through this task. **[9]**

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