Sample assessment task

Unit 1, Outcome 2
Networks

Outcome 2

On completion of this unit the student should be able to design a network with wireless capability that meets an identified need or opportunity, explain its configuration and predict risks and benefits for intended users.

Task

For Unit 1, Outcome 2, students need to design and draw a network diagram. They need to explain the configuration selected for the network and identify the potential benefits and threats that users may encounter.

Students are required to be given a case study outlining either an identified need or opportunity for an organisation. Students then need to answer a series of structured questions.

It possible to complete the task under test conditions in a fixed amount of time. However, it is also acceptable for the students to complete the task as an ongoing open-book project.

The time allocated to the task can be between 1 and 3 × 50-minute periods.

CASE STUDY

Smarty Pants Tutoring is a small business located in a building in the eastern suburbs of Melbourne. It offers after-school and weekend tutoring for primary and secondary school students. Benita Levi is the owner-operator of the business. She employs 10 part-time tutors.

The building consists of a main office area for Benita, a front reception area, a large room that contains four smaller rooms used for tutoring sessions, and a reasonably sized store room.

At present, all of the computing devices used in the business are standalone devices. Each tutor room contains a stand-alone desktop computer so tutors can access the resources needed for each session.

Smarty Pants Tutoring is a successful business and the number of clients is growing because of the excellent reputation of the company in the local community, so Benita has decided to install a computing network within the building.

The local area network (LAN) requires:

- a workstation for Benita in her office area
- a workstation for the receptionist
- wireless access to the LAN so Benita and other staff can roam all parts of the office when using laptops, tablets or smartphones and remain connected to the network
- a laptop or tablet in each of the four tutoring areas
- central storage and sharing of all student information, staff details, business records, tutoring timetable software, and learning resources used by tutors.
- an internet connection to allow users of the network to access the internet.

The reception area will also accommodate a printer that will be shared by all staff.

Requirements

1	Identify whether the network at Smarty Pants Tutoring would be considered a local area network (LAN) or a wide area network (WAN). Justify your answer.	2 marks
2	Benita has been told by Sam, a networking consultant, that his network will require a number of networking components. Describe the role the each of the components listed in the Smarty Pants network. • Modem • File server • Wireless access point • Network operating system	4 marks
3	Sam has also informed Benita that the network will require both a switch and a router. Explain how a switch differs to a router.	2 marks
4	The devices connected using wired connections on the network will communicate using the Ethernet protocol. Discuss when the protocols TCP/IP and 802.11 will be used to communicate data and information.	2 marks
5	Outline one advantage and one disadvantage for tutors who will utilise the wireless communication technology on the network.	2 marks
6	When tutoring students in one of the tutoring areas tutors have the choice of using either a laptop or tablet in the room to access the resources needed during a session. List which of the two devices would be more appropriate for tutors to use during a session – a laptop or a tablet. Justify your answer.	3 marks
7	Sam has also talked to Benita about the potential of malware threating the security of the network. Other than malware, discuss one security threat to the data stored centrally on the network.	2 marks
8	Define the term 'malware'. Give an example to support your answer.	2 marks
9	Once the network is installed, each morning when Benita arrives at work she will log into the network. using her workstation in her office. She will then open the tutoring timetable so that she is aware of all the sessions occurring that day. List one example of each of the following information system components involved when Benita arrives in the office each morning. • People • Process • Data • Digital system component	2 marks

10	Many of the tutors at Smarty Pants also work as teachers at local schools during the day. Benita is aware that some of the teachers bring resources from their schools, which Smarty Pants may not have permission to use, and the teachers could potentially upload these resources to the network storage area. Discuss one legal issue and one ethical issue associated with the storage of resources on the network that Smarty Pants may not have the permission to use.	2 marks
11	Outline two advantages for Smarty Pants of installing a network compared with the existing system of standalone computers. The advantages must be directly linked to the Smarty Pants business.	2 marks
12	Using an appropriate software tool create a diagram of the proposed network. Your diagram must include: • the layout of the building • the hardware and software components • wired and wireless communication • protocols • security measures.	15 marks
	Total	**40 marks**