Cambridge International AS & A Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION TECHNOLOGY **9626/31**

Paper 3 Advanced Theory **October/November 2022**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use an HB pencil for any diagrams, graphs or rough working.
- Calculators must **not** be used in this paper.

INFORMATION

- The total mark for this paper is 70.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages. Any blank pages are indicated.

[Turn over

1 Explain how each of the following is used in a network.

(a) web server

....

....

....

....

.... [2]

(b) mail server

....

....

....

....

.... [2]

(c) print server

....

....

....

....

.... [2]

2 Packet switching is one way of transmitting data between computers in networks. The User Datagram Protocol (UDP) is a protocol used when creating data packets to send to other computers on the network.

(a) Explain how the contents of the header are used when sending a data packet using UDP.

....

....

....

....

....

....

....

....

....

....

....

.... [6]

(b) Describe the drawbacks of using UDP to send data over a network.

....

....

....

....

....

....

....

....

.... [3]

3 The process of data mining is divided into phases.

Describe the tasks that occur in each of the following phases.

(a) business understanding

....

....

....

....

....

....

....

....

.... [3]

(b) data modelling

....

....

....

....

....

....

....

....

....

....

.... [4]

4   Cryptocurrency can be used to make financial transactions.

Discuss the impact of the use of cryptocurrency on individuals.

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

.... [8]

6

5 A software development company is using the Agile method of software development to create a new app for a client to use on mobile devices.

Discuss the use of the Agile method of software development when creating a new app for the client.

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

.... [8]

6 Discuss the advantages and disadvantages of the use of microwave transmissions for communications.

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

.... [8]

7 Bitcoin is a decentralised banking system which can be used to buy goods and services.

(a) Explain why Bitcoin is classified as a decentralised system.

....

....

....

....

.... [2]

(b) Describe how Bitcoin can be used to buy goods from another Bitcoin holder.

....

....

....

....

....

....

....

....

....

....

....

.... [4]

8 Technology enhanced learning (E-learning) can be delivered using a Massive Open Online Course (MOOC).

(a) Describe the features of a MOOC.

....

....

....

....

....

....

....

....

....

.... [4]

(b) Explain the drawbacks to students of using a MOOC.

....

....

....

....

....

....

....

....

....

....

.... [4]

9 Bit rate is a measure of how fast data can be sent from one device to another on a network.

(a) Describe how the bit rate of a video stream is measured on a network.

....

....

....

....

.... [2]

(b) Identify **two** factors that can affect the bit rate in data communication.

1 ....

....

....

2 ....

....

....

[2]

10 Data stored on a network can be subject to different types of threats.

Explain how these threats can be detected.

....

....

....

....

....

....

....

....

....

....

....

.... [6]

BLANK PAGE