



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

Level 3 Technical Level IT COMMUNICATION TECHNOLOGIES

Unit Number: H/507/6426

Monday 26 June 2017

Morning

Time allowed: 2 hours

Materials

For this paper you must have:

- a ruler.

You may use:

- a calculator
- stencils or other drawing equipment (eg flowchart stencils).

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer all questions in **both** sections.
- You must answer each question in the space provided. Do not write outside the box around each question or on crossed through pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- If you need more space use the additional pages at the back of this booklet.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- There are 50 marks in **Section A** and 30 marks in **Section B**.

Advice

- In all calculations, show clearly how you work out your answer.
- Use diagrams, where appropriate, to clarify your answers.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

For Examiner's Use	
Examiner's Initials	
Question	Mark
1–5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
TOTAL	



J U N 1 7 H 5 0 7 6 4 2 6 0 1

G/TI/Jun17/E4

H/507/6426

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ANSWER IN THE SPACES PROVIDED**



Section AAnswer **all** questions in this section.**Total for this section: 50 marks**In the multiple-choice questions, only **one** answer per question is allowed.

For each answer completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.

**0 1**Modulation is the process of using one signal to modify another signal.
What name is given to the signal being modified?

A The PHASE

☐

B The CARRIER

☐

C The FREQUENCY

☐

D The AMPLITUDE

☐**[1 mark]****0 2**Which **one** of the following is **not** an example of wired transmission media?

A Twisted pair cable

☐

B Coaxial cable

☐

C Telephone lines

☐

D Infrared signals

☐**[1 mark]****Turn over ►**

0 3

Which **one** of the following best describes the key functions of a SIM card?

A IDENTIFY and AUTHENTICATE

☐

B TRANSMIT and RECEIVE

☐

C TRACK and CONTROL

☐

D CONFIGURE and ENCRYPT

☐

[1 mark]

0 4

Which **one** of the following is a **computer network** most likely to be used in e-commerce for high-speed online processing of large volumes of data?

A Local Area Network (LAN)

☐

B Wireless Local Area Network (WLAN)

☐

C Personal Area Network (PAN)

☐

D Storage Area Network (SAN)

☐

[1 mark]

0 5

Which **layer** of the Open System Interconnection (OSI) model is also known as the **network interface** layer?

A Application

☐

B Transport

☐

C Network

☐

D Data link

☐

[1 mark]

5



0 6

1G, 2G, 3G and 4G development has transformed mobile telecommunications to support the latest generation of smartphones.

Complete the table below, stating **one** key feature of each development.

[2 marks]

1G	
2G	
3G	
4G	

2

0 7 . 1

Define what is meant by point-to-point **connection**.

[1 mark]

0 7 . 2

Give **one** example of point-to-point **communication**.

[1 mark]

2

Turn over for the next question

Turn over ►



0 8

Megabits per second (Mbps) is the ISP industry-standard unit for measuring your broadband connection speed.

Give **two** other examples of an appropriate unit for measuring broadband connection speed.

[2 marks]

2

0 9

Communications data (sometimes referred to as traffic data or metadata) is different from the content of the message.

Give **two** examples of metadata.

[2 marks]

2

1 0

Explain, using examples, why **network bandwidth** consumption and **network bandwidth capacity** are both important when calculating network bandwidth requirements.

[4 marks]

4



1	1
---	---

Provide a **technical** description of a **touch screen** for a mobile device.

[3 marks]

3

1	2
---	---

Explain why the use of **licensing** helps to ensure that mobile network operators' transmissions do **not** interfere with each other.

[3 marks]

3

1	3
---	---

Where might a network manager find a list of devices which are (or have been) connected to the local area network?

[3 marks]

3

Turn over ►



1 4 . 1

Give **one** advantage of using **serial transmission** and **one** advantage of using **parallel transmission**.

[2 marks]

Serial transmission _____

Parallel transmission _____

1 4 . 2

State where parallel data transmission would be used.

[1 mark]

3

1 5 . 1

List **three** ways in which an analogue signal can be modulated.

[1 mark]

1 5 . 2

Explain how a **modem** enables a computer to transmit data using a telephone line.

[2 marks]

3



1	6
---	---

Explain the key features of **simplex**, (full) **duplex** and **half-duplex** data transmission.

[4 marks]

Simplex _____

Duplex _____

Half-duplex _____

4

Turn over ►



1 7

Describe the terms **crosstalk** and **interference**, giving an example of each.

[6 marks]

Crosstalk _____

Interference _____

6

1 8

The real-world usage of the terms **mobile hotspot** and **tethering** has become almost interchangeable.

Explain your understanding of these terms and provide an example of how or where each might be used.

[4 marks]

4



1	9
---	---

Rather than using wired technology, a business decides to use mostly **wireless technology** when replacing its communication network.

Give **two** advantages and **two** disadvantages for the business making the decision to use **wireless technology**.

[4 marks]

Advantage 1 _____

Advantage 2 _____

Disadvantage 1 _____

Disadvantage 2 _____

4

Turn over for Section B

Turn over ►



Section BAnswer **all** questions in this section.**Total for this section: 30 marks****2 0****Network topology** is the arrangement of the various elements (links, nodes, etc.) of a computer network.**2 0 . 1**Choose **three** of the following network topologies and identify a strength and a weakness for each:

- Bus
- Ring
- Star
- Tree
- Mesh

[6 marks]

Choice 1 _____

Strength _____

Weakness _____

Choice 2 _____

Strength _____

Weakness _____

Choice 3 _____

Strength _____

Weakness _____



2 1 . 1

Draw a diagram that shows both the **OSI** and **TCP/IP** network models.

[3 marks]



2 1 . 2

Compare and contrast the **OSI** and **TCP/IP** network models.

In doing so, you should summarise:

- the functions of each model
- the relationships between each model
- the purposes of each layer.

[12 marks]



15





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