Level 3 Voice and data communications (7540-370)

Systems and Principles
Assignment guide for Candidates
Assignment B

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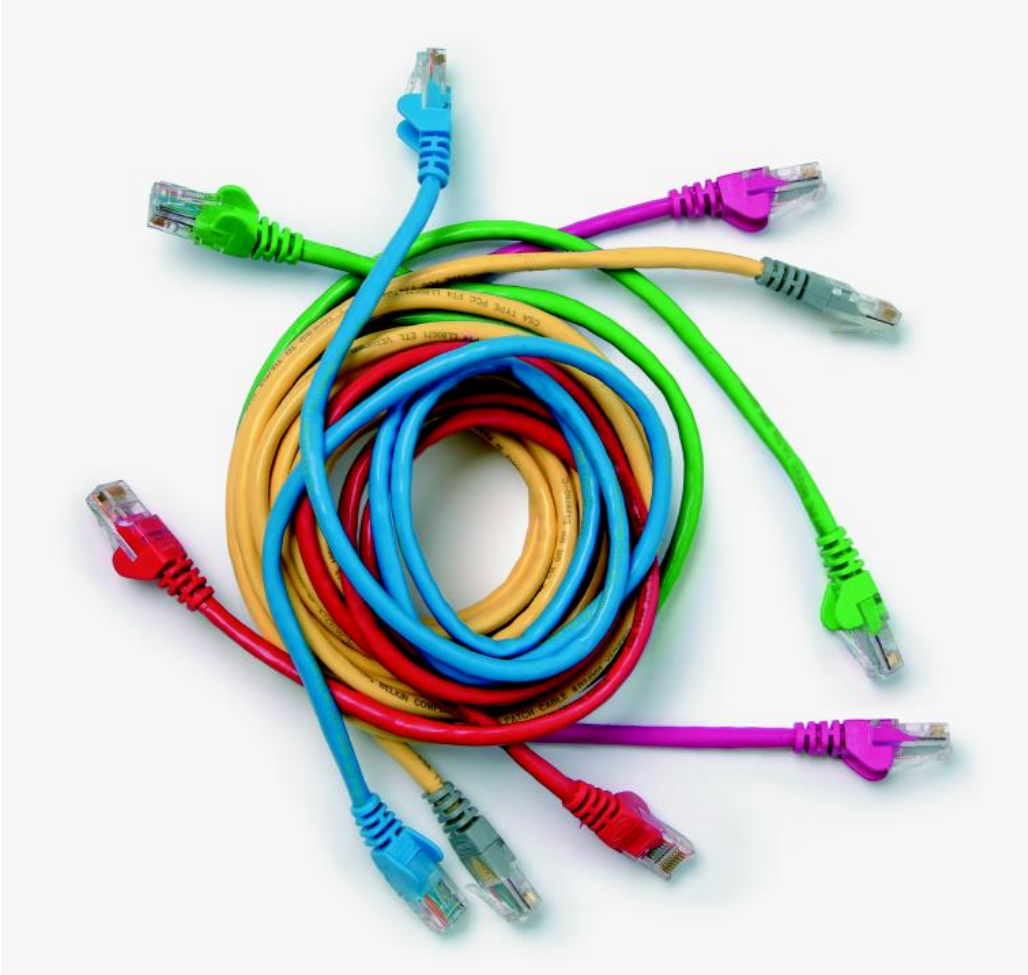

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Assignment B
Introduction – Information for Candidates

About this document
This assignment comprises all of the assessment for Level 3 Voice and data communications (7540-370).

Health and safety
You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance
The recommended time allowance for this assignment is **3 hours**.

Level 3 Voice and data communications (7540-370)
Candidate instructions

Candidates are advised to read **all instructions** carefully before starting work and to check with your assessor, if necessary, to ensure that you have fully understood what is required.

Time allowance: 3 hours

This assignment is made up of **two** tasks

- **Task A** – Provide the correct answers to the Networking quiz questions
- **Task B** – Provide the correct answers to the diagram quiz questions

Scenario

You have just been appointed as a Voice and Data Communications Technician, with a large company, specialising in the installation and maintenance of communications network infrastructure.

You have discovered that a rivalry exists between the two teams of Technical Services Apprentices that work within the organisation. As you have only just been appointed, you are considered to be "neutral" at this point in time.

You have therefore been tasked with providing the answers to questions that will be used in a "Quiz Night" involving these teams, to be held in a week's time.
Your answers should be short, clear descriptions or short definitions as required.

The quiz will be in three parts: Networking questions, Diagrams or Sketches and Telecommunications questions.

Any definitions you provide should use non-technical language where possible, including when describing technical terms, components or devices.
Where you use technical terminology in a definition in an answer, you should also provide a brief explanation of this terminology.

Task A – Provide the correct answers to the Networking quiz questions

1 Identify and describe **three** different media used for voice and data communication.

2 Explain the meaning of **sidetone**.

3 Briefly explain the principle of switching in telecommunication networks.

4 Giving **three** examples, explain what is meant by 'value added exchange services'.

5 Briefly describe what is meant by the following:

- Traffic offered
- Traffic carried
- Traffic lost
- Busy hour.

6 Briefly describe the physical components of the Access Network.

7 Briefly explain the difference between ISDN and ADSL.

8 Identify and briefly describe **five** components of a simple data communication system.

9 Describe the format of the following:

- Serial data
- Parallel data.

10 Briefly explain the difference between 'Synchronous' and 'Asynchronous' data transmission.

11 Briefly explain the following **three** techniques:

- Message-switching
- Circuit-switching
- Packet-switching.

12 Briefly explain the term Datagram.

13 Briefly describe a typical routing algorithm for a packet-switching network.

14 Briefly describe what is meant by the following:

- source coding
- channel coding
- line coding
- WAN data services.

15 Briefly explain **three** reasons for the increased popularity of IP telephony when compared to legacy switched networks.

16 Identify **three** advantages of a converged network.

17 Compare the following **two** VOIP signalling standards:

- RTP
- RTSP

and describe any quality of service issues.

18 Briefly explain the differences between:

- broadcast-media-access
- non-broadcast-media-technologies.

19 Describe how Ethernet and Token Ring Technologies work.

20 Identify **two** factors, which will reduce the total throughput of data within a LAN or reduce the bandwidth available for each individual node.

21 Identify and briefly explain **two** examples of PAN (Personal Area Network) wireless technology.

22 Identify **two** relevant standards for wireless access for LANs (IEEE).

23 Briefly explain how flow control is implemented at the data link layer, using **two** different flow control methods and indicate which is capable of higher bit rates.

24 Briefly describe the basic operation and facilities offered by the ATM protocol.

25 Briefly explain **two** reasons why IP v4 has been developed into IP v6.

26 List **four** 'well known' User Datagram Protocol (UDP) port numbers and state the function of each port.

27 Convert the following IP address 10.25.200.169 to:

- Binary (Base 2)
- Hexadecimal (Base 16)

IP Addresses.

28 Identify the range of IP Addresses, using 'dotted decimal notation', corresponding to the following classes:

- Class A
- Class B

- Class C
- Unassigned (currently).

29 Briefly explain the circumstances in which Variable Length Subnet Masking (VLSM) would be used.

30 Briefly explain the operation of the following protocols:

- Address Resolution Protocol (ARP)
- Reverse Address Resolution Protocol (RARP).

31 Identify the body responsible for allocating UK IP-addresses.

32 Briefly explain the use of the Domain Name Service (DNS).

Task B – Provide the correct answers to the diagram quiz questions

1 Describe, using a diagram, typical graphs of telephone traffic intensity against time over a 24-hour period for both national and international exchanges.

2 Use a diagram to identify the layers of the TCP/IP model comparing it with the Open Systems Interconnect (OSI) 7-layer model and explain the functions performed by each layer.

3 Explain the function of the following protocols, identifying the layer at which they operate in the TCP/IP protocol suite:

- SNMP
- TCP
- IP
- FDDI.

4 Identify both the network and host portions of the IP address 200.151.28.0/26 (eg a 26 bit subnet mask – subnetted as Class C), identify the following:

- The subnet mask
- How many subnets are there
- The 1st subnet host address range
- The broadcast address.

5 Which one of the following IP addresses is reserved for loopback?

a) 0.0.0.127
b) 127.0.0.0
c) 192.168.0.1
d) 255.255.255.255

Note

- At the conclusion of this assignment, hand all paperwork and removable media to the test supervisor.
- Ensure that your name is on the removable media and all documentation.
- If the assignment is taken over more than one period, all removable media and paperwork must be returned to the test supervisor at the end of each sitting.

End of assignment

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