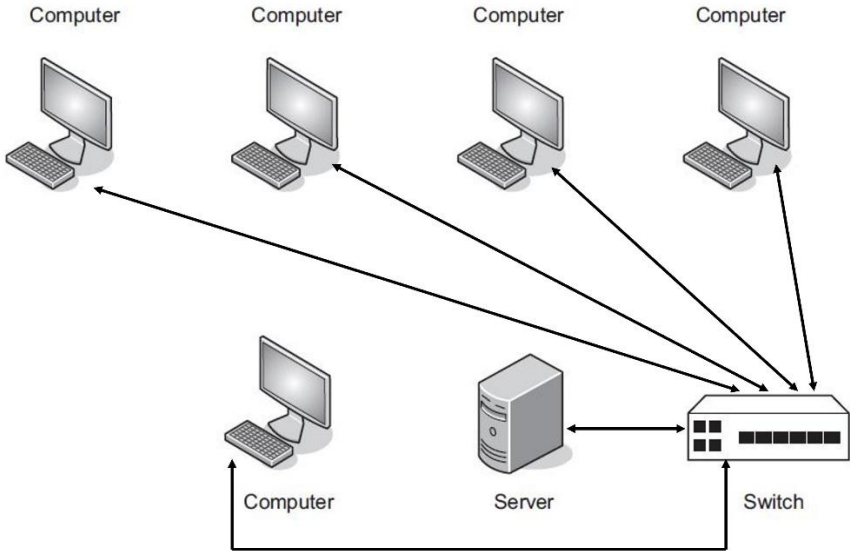


8(a)	1 mark for each correct explanation, max 2 marks Virus: Malicious program/software that replicates/copies itself and deletes/alters files/data stored on a computer Pharming: Malicious code/software installed on a computer which redirects user to a fake website to obtain personal data
8(b)	1 mark per bullet point, max 3 marks e. g. • Students should consider privacy issues • Students should not make inappropriate use of social networking // Students should not engage in cyberbullying • Students should not copy work that is not their own • Students should abide by the school rules/guidelines for accessing the network • Students should only use the school network for legitimate purposes • Students should not hack / crack other computers
8(c)	1 mark per bullet point, max 4 marks e. g. Negative Impacts • If students use AI to shortcut learning, they may miss out on developing reasoning and problem-solving skills // Students may not be learning anything // It could lead to a decline in specific skills • It could have negative impacts on student communication // heavy reliance on AI may limit opportunities for collaboration, teamwork, and face-to-face communication • Emphasises the digital divide// some students may not have access to the technology • The AI answer might not be correct leading to mis-information • Increased screen time and isolation could contribute to anxiety or loneliness Positive Impacts • Students given additional support may do better • Pupils who struggle in traditional settings may gain self-esteem through AI-assisted learning at their own pace Long-Term Impacts • Protection of intellectual property // ethical issues and considerations • Schools may need to redesign curricula and/or assessment to integrate AI

1	1 mark for 2 or 3 correctly connected verification method boxes, 2 marks for all 4 correct Verification Method Use <pre>graph LR; A[Parity byte check] --- D[Data transfer]; B[Checksum] --- D; C[Visual check] --- E[Data entry]; F[Parity block check] --- D; F --- E;</pre> The diagram consists of two columns. The left column, titled 'Verification Method', contains four boxes: 'Parity byte check', 'Checksum', 'Visual check', and 'Parity block check'. The right column, titled 'Use', contains two boxes: 'Data transfer' and 'Data entry'. Lines connect the boxes as follows: 'Parity byte check' to 'Data transfer'; 'Checksum' to 'Data transfer'; 'Visual check' to 'Data entry'; 'Parity block check' to both 'Data transfer' and 'Data entry'.
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5(a)	1 mark per bullet point, max 2 marks - Covers a small geographical area - Normally privately owned / dedicated infrastructure - Can use wired or wireless communication
5(b)	1 mark per bullet point, max 2 marks - All computers directly connected to switch and no other connections - Switch connected directly to server 
5(c)	1 mark per bullet point, max 3 marks - The sending device sends the packets to the switch - The switch checks the destination address on each packet ... and sends them only to the intended receiver
5(d)	1 mark per bullet point, max 3 marks - The use of <u>CSMA/CD</u> // Carrier Sense Multiple Access with Collision Detection - The workstations listen to the communication channel ... and send data only when there is no data being transmitted / the line is idle - If a collision is detected, transmission is aborted ...and a jamming signal is sent - The workstation calculates a random wait time before trying to re-transmit - The random time is increased if there are multiple collisions

5(e)

1 mark for correct threat
1 mark corresponding description
1 mark for correct method of prevention

Threat	Description	Prevention
Malware / Virus	Malicious code that can alter/delete files	Anti-virus // Anti-malware // Firewall
Spyware	Records keystrokes which are sent to third party	Anti-spyware // Firewall // Anti-malware
Hacking	Gaining <u>unauthorised</u> access to a computer network / device	Authentication // Firewall
Phishing	<u>Emails</u> supposedly from reputable companies are sent to trick people into revealing personal information	Use a spam filter // Do not open emails from unknown sources
Pharming	Users are directed to a bogus <u>website</u> that looks legitimate to obtain personal information	Use a VPN // Anti-malware// Do not open links or download attachments

6(a)	One mark per point: 1 Create a list of numbers that should generate all of the possible check digit values 2 and check that each / the / a generated value is as expected
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6(b)	Note 2 different solutions with different mark scheme Example solution – conversion to string and using a loop <pre> FUNCTION CheckNumber(Number : INTEGER) RETURNS BOOLEAN DECLARE Total, Index, CheckDigit : INTEGER DECLARE NumString : STRING Total ← 0 NumString ← NUM_TO_STR(Number) CheckDigit ← STR_TO_NUM(RIGHT(NumString, 1)) // CheckDigit ← Number MOD 10 FOR Index ← 1 TO LENGTH(NumString) - 1 // 1 TO LENGTH(NUM_TO_STR(Number DIV 10)) Total ← Total + STR_TO_NUM(MID(NumString, Index, 1)) ENDFOR IF Total MOD 10 <> CheckDigit THEN RETURN FALSE ENDIF RETURN TRUE ENDFUNCTION </pre> Mark as follows: 1 Function Header including Identifier, parameters and return type 2 Use of Num_TO_STR to convert parameter // Use of Num_TO_STR to convert parameter excluding least significant digit to a string 3 Extract CheckDigit from NumString // Extract least significant digit from parameter 4 Loop for length of NumString - 1 following correct conversion to string 5 attempt to form sum of digits in a loop 6 completely correct sum of digits in a loop and of sum initialised before loop 7 Calculate check digit from sum 8 Compare sum with final digit of parameter and return appropriate Boolean value Max 7
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6(b)

Example solution – numeric version

```

FUNCTION CheckNumber(Number : INTEGER) RETURNS BOOLEAN
  DECLARE Sum, CheckDigit, Remainder: INTEGER

```

```

  Remainder ← Number MOD 10

```

```

  Number ← Number DIV 10

```

```

  CheckDigit ← Remainder

```

```

  Sum ← 0

```

```

  WHILE Number > 0

```

```

    Remainder ← Number MOD 10

```

```

    Number ← Number DIV 10

```

```

    Total ← Total + Remainder

```

```

  ENDWHILE

```

```

  IF Total MOD 10 <> CheckDigit THEN

```

```

    RETURN FALSE

```

```

  ENDIF

```

```

  RETURN TRUE

```

```

ENDFUNCTION

```

- 1 Function Header including Identifier, parameters and return type
- 2 Initialise Sum
- 3 Set CheckDigit to least significant digit in Number
- 4 Loop while Number > 0
- 5 attempt to use MOD and DIV to sum successive digits in Number **in loop**
- 6 completely correct sum of all digits in Number **apart** from least significant digit **in loop**
- 7 Calculate check digit from sum
- 8 Compare with CheckDigit **and** return appropriate Boolean value

Max 7