COMPUTER SCIENCE **9608/32**

Paper 3 Written Paper **May/June 2017**

MARK SCHEME

Maximum Mark: 75

Published

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This document consists of **7** printed pages.

Question	Answer	Marks
1(a)(i)	`DECLARE NewFriend  : MyContactDetail`	**1**
1(a)(ii)	`NewFriend.HouseNumber ← 129`	**1**
| 1(b) | Declaration of `Name`, `Area`, `HouseNumber`      1 <br> Inclusion of three correct values for `Area`      1 <br> Inclusion of correct range for `HouseNumber`      1 <br><br> For example: <br><br> ```
TYPE MyContactDetail
   DECLARE Name        : STRING
   DECLARE Area        : (uptown, downtown, midtown)     1
   DECLARE HouseNumber : 1..499                        1 & 1
ENDTYPE
``` | **3** |
1(c)(i)	4402	**1**
1(c)(ii)	33	**1**
1(c)(iii)	3427	**1**
1(c)(iv)	`TRUE`	**1**
1(d)(i)	`IPointer ← @MyInt2`	**1**
1(d)(ii)	`MyInt1 ← 33`	**1**
1(d)(iii)	`IPointer^ ← MyInt2`	**1**

Question	Answer	Marks
2(a)(i)	Pharming	**1**
2(a)(ii)	Phishing	**1**
2(a)(iii)	A <u>standalone/independent</u> piece of malicious software 1 that can replicate/duplicate itself 1	**2**
2(b)	No up-to-date anti-virus (or equivalent) software (used) / Regular virus scans not performed No firewall Operating system not up-to-date/obsolete Attachments/suspicious links in emails clicked on Clicking on website with an out of date security certificate **max 2**	**2**
2(c)(i)	(Certificate) serial number 1 Certificate Authority (that issued certificate) 1 Valid date(s) // Date of expiry 1 Subject name (name of user/owner, computer, network device) 1 Subject public key 1 Version (Number) 1 Hashing algorithm (data or signature) 1 **max 3**	**3**
2(c)(ii)	CA uses hashing algorithm .. 1 To generate a message digest from the particular certificate 1 Message digest is encrypted with CA's private key 1	**3**
2(c)(iii)	Need to know that the certificate is genuine (and has not been altered) // Authenticate or verify it (came from the CA)	**1**

Question	Answer	Marks
3(a)	$S = (\overline{P} + (\overline{Q+R})) . R$ $\overline{P}$ 1 $(\overline{Q+R})$ 1 $(\overline{P}+(\overline{Q+R}))$ 1 $. R$ (must be outside final brackets) 1 Or $\overline{P}$ 1 $(\overline{Q+R})$ 1 $\overline{P}+(\overline{Q+R})$ 1 **(………..).** R 1	4

3(b)

P	Q	R	Working space	S
0	0	0		0
0	0	1		1
0	1	0		0
0	1	1		1
1	0	0		0
1	0	1		0
1	1	0		0
1	1	1		0

2 marks all correct, 1 mark seven correct, 0 marks six or fewer correct

Marks: 2

3(c)(i)

PQ

	00	01	11	10
R 0	0	0	0	0
1	1	1	0	0

Marks: 1

3(c)(ii)

PQ

	00	01	11	10
R 0	0	0	0	0
1	1	1	0	0

Marks: 1

3(c)(iii) $S = \overline{P} . R$ **1**

Question	Answer		Marks
3(d)	$S = (\bar{P} + (\overline{Q+R})) . R$		**3**
	$S = (\bar{P} + (\bar{Q} . \bar{R})) . R$ // $\bar{P} . R + (\overline{Q+R}) . R$	1	
	$S = (\bar{P} . R) + (\bar{Q} . \bar{R} . R)$	1	
	$S = \bar{P} . R + \bar{Q} . 0$	)	
	$S = \bar{P} . R + 0$	) 1	
	$S = \bar{P} . R$		

Question	Answer	Marks
4(a)	**File organisation method** **File access method** 1 mark for random correct 1 mark for serial correct 2 marks for sequential correct (1 per correct line)	**4**
4(b)(i)	File A: Serial 1 Meter readings are submitted over time // added to the end of file 1 Stored chronologically 1	**3**
4(b)(ii)	File B: Sequential 1 Any two points from: Each customer has a unique account number 1 Sorted on Account number 1 High hit rate // Suitable for batch processing monthly statements 1	**3**
4(b)(iii)	File C: Random 1 Login without waiting // Random organisation allows fastest direct access to required record 1 Low hit rate // Suitable for access to individual records 1	**3**

Question	Answer	Marks
5(a)		**3**

Option 1

Application Layer
Transport
Internet
Network Interface

Option 2

Application Layer	
Transport (Layer)	1
Network (Layer)	1
(Data) Link (Layer)	1

Question	Answer	Marks
5(b)(i)	Peer-to-peer	**1**
5(b)(ii)	File sharing	**1**
5(b)(iii)	Any four points from the following: • Torrent descriptor file is made available • File to be shared is split into pieces • BitTorrent client software made available to other peers / users / computers Allowing them to work as seeds or leeches. A peer can act as a 'seed' – used to upload pieces of a file Peer downloading file can get pieces from different seeds simultaneously • Once a peer has a piece of the file it can become a seed for the parts downloaded Leeches download much more than they upload • Central server called a tracker keeps records of all the peers ('swarm') and the parts of the file they have Can pause and restart at any time.	**Max 4**
5(c)	Any two protocols from: HTTP/HTTPS … 1 Used for transfer of web pages from server to client 1 FTP … 1 Used for interactive file transfer 1 SMTP … 1 Used for sending email messages 1 POP3 … 1 Used for incoming email messages 1	**Max 4**

Question	Answer		Marks
6(a)(i)	Monitoring system		**1**
6(a)(ii)	There is no element of 'control' in the system // the system does not alter conditions in the building if sensors triggered		**1**
6(a)(iii)	Any two sensors from: Sound / acoustic Pressure Infra-red / motion /proximity Temperature / Thermal Light Smoke Tilt		**Max 2**
6(b)(i)	```01 ForEver ← FALSE //TRUE```	1	**3**
	```02 REPEAT```		
	```03 FOR FloorCounter ← 1 TO NoOfFloors```		
	```04 FOR SensorCounter ← 1 TO NumberOfSensors```	1	
	```05 READ Sensor(SensorCounter)on Floor(FloorCounter)```		
	```06 IF Sensor value outside range```		
	```07 THEN```		
	```08 OUTPUT "Problem on Floor ", FloorCounter```		
	```09 ENDIF```		
	```10 ENDFOR```		
	```11 ENDFOR```		
	```12 //```		
	```13 // Delay loop```		
	```14 // Delay loop```		
	```15 //```		
	```16 UNTIL ForEver/Forever = TRUE // NOT ForEver / ForEver = FALSE```	1	
6(b)(ii)	```FOR Counter ← 1 TO 999999``` (any "large" number) ```ENDFOR```		**1**
6(b)(iii)	To allow time to elapse between readings		**1**
6(c)(i)	To identify which <u>sensor</u> caused the interrupt		**1**
6(c)(ii)	Display appropriate warning message	1	**2**
	On the correct monitor	1	