



12 Pages

1. Please give the information requested in the boxes below
2. Enter your name in the space provided to the right, fold the flap and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

1	Student Number	1704227
2	Title of Examination Paper	computer architecture and networks
3	Module Code	ACCA4001
4	Date and Time of Examination	10/05/2018 15:00
5	Examination Venue	Townhill Gym
6	Seat Number	6020
7	Number of Answer Books handed in	

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)

**Complete, fold and seal
(see note 2 below)**

SURNAME:

Wachman

FORENAME(S):

Daniel

(See the other side for English version)

7	Nifer y Llyfrau Atebion a gyflwynwyd	
6	Rhif Sedd	
5	Lleoliad yr Arholiad	
4	Dyddiad ac Amser yr Arholiad	
3	Cod y Modwl	
2	Teil y Papur Arholiad	
1	Rhif Myfyriwr	

[illegible]

1. Rhowch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhowch eich enw yn y lle a ddarparwyd ar y dde, plygch ef at' selio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgrïpt annarllenadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilpdd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwrr/gwylwyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

Cyfarwyddiadau i Ymgeiswyr

12 Tudalen

Llyfr Atebion Arholiadau



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Llenwch, plygwch a seliwch
(gyweler nodyn 2 isod)

CYFENW:

ENW(AU) CYNTAF:

* Many calculations
done on back pages
of book.

Examiner Only

Question No.

Question One

A)

a) 00111000

3 ✓

b) 1010 0011

3 ✓

B)

a) 230_{10}

3 ✓

b) 83

3 ✓

C)

a) 1000 1011

2 ✓

b) 1010 0111

2 ✓

D)

a) 35

3 ✓

b) 239

3 ✓

E) 16 numbers/values

2 ✓

F) 480 MB KB

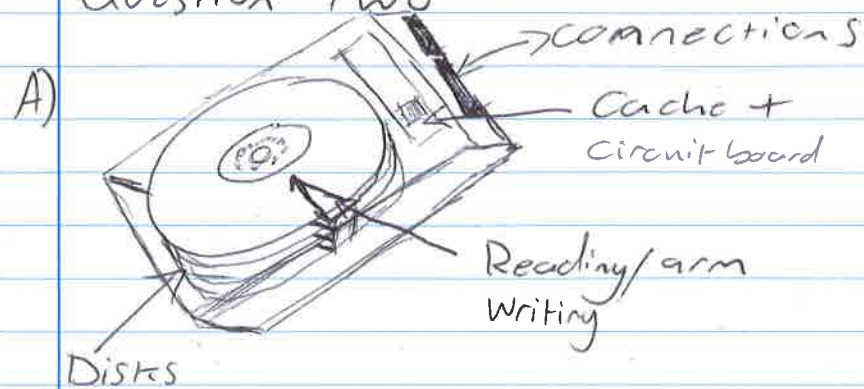
3 ✓

G)

Arholwr yn unig

Rhif y Cwestiwn

Question Two



Operation: In a mechanical drive, the data is stored onto the disks that are stacked on top of each other with spacing in between. The disk spin typically around 5200 to 7200 rpm. The arm then reads or writes the data to the disks as it is created or needed.

Sustained transfer speed is the speed on which the drive is rated to continuously be able to read or write. E.g. large file transfer.

The access time is the speed on which it takes the arm to locate the data stored on the disk drive and present it.

The burst transfer speed is the rated speed the drive can read/write smaller files or chunks of data in quick succession.

B) An SSD differs to a HDD as it contains no moving parts and uses instead a form of flash storage.

Two advantages are:

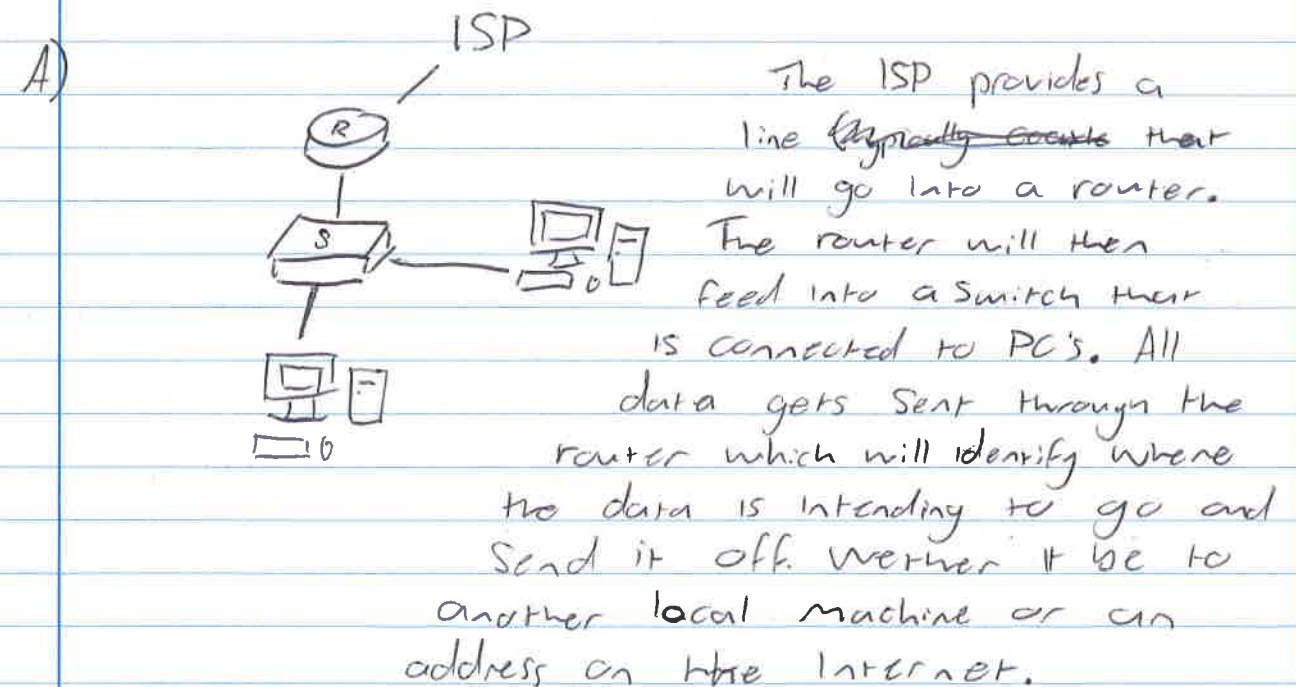
- much greater read/write speeds
- longer lifespan due to no moving parts creating wear

A disadvantage is that they cost a lot more than a traditional HDD.

Question Three

On question sheet.

Question Four



B) OSI 7 Layer model

Application ✓
 Presentation ✓
 Session ✓
 Transport ✓
 Network ✓
 Data Link ✓
 Physical ✓

128	64	32	16	8	4	2	1
1	1	0	✓	✓	0	0	0
1	0	1	0	1	0	0	0
0	0	0	1	1	0	1	0
0	0	1	0	0	1	1	0
1	0	1	0	1	1	0	0
1	1	1	0	1	0	0	0
0	1	0	0	1	1	1	0
1	1	1	1	1	1	1	0

7 ✓

C)

D) i) 1100 0000, 1010 1000, 0001 1010, 0010 0110 ✓

ii) 1010 1100, 1110 1000, 0100 1110, 1111 1110 $\frac{1}{2}$ ✓

iii) 111111, 111 111, 111 111, 1111 0000 ✓

1 ✓

 $\frac{1}{2}$ ✓

1 ✓

8	4	2	1		
0	0	0	0	0	0
0	0	0	1	1	1
0	0	1	0	2	2
0	0	1	1	3	3
0	1	0	0	4	4
0	1	0	1	5	5
0	1	1	0	6	6
0	1	1	1	7	7
1	0	0	0	8	8
1	0	0	1	9	9
1	0	1	0	10	A
1	0	1	1	11	B
1	1	0	0	12	C
1	1	0	1	13	D
1	1	1	0	14	E
1	1	1	1	15	F

$$\begin{array}{r}
 128 \\
 64 \\
 32 \\
 4 \\
 2 \\
 \hline
 230 \\
 -2 \\
 \hline
 128
 \end{array}$$

$$\begin{array}{r}
 64 \\
 16 \\
 2 \\
 \hline
 82
 \end{array}$$

$$\begin{array}{r}
 128 \quad 64 \quad 32 \quad 16 \quad 8 \quad 4 \quad 2 \quad 1 \\
 0 \quad 0 \quad 1 \quad 1 \quad 1 \quad 0 \quad 0 \quad 0 = 56 \\
 1 \quad 0 \quad 1 \quad 0 \quad 0 \quad 0 \quad 1 \quad 1 = 163 \\
 1 \quad 1 \quad 1 \quad 0 \quad 0 \quad 1 \quad 1 \quad 0 = 230 \\
 0 \quad 1 \quad 0 \quad 1 \quad 0 \quad 0 \quad 1 \quad 1 = 83
 \end{array}$$

$$1000 \quad 1011 \quad 1010 \quad 0111$$

$$\begin{array}{r}
 128 \quad 64 \quad 32 \quad 16 \quad 8 \quad 4 \quad 2 \quad 1 \\
 0 \quad 0 \quad 1 \quad 0 \quad 0 \quad 0 \quad 1 \quad 1 \\
 1 \quad 1 \quad 1 \quad 0 \quad 1 \quad 1 \quad 1 \quad 1
 \end{array}$$

$$\begin{array}{r}
 32 \\
 2 \\
 1 \\
 \hline
 32 \\
 64 \\
 32 \\
 8 \\
 4 \\
 2 \\
 2 \\
 \hline
 239 \\
 -2 \\
 \hline
 237
 \end{array}$$

QUESTION TWO (20 marks total)

- a) Produce a labelled diagram showing the construction of a typical rotating hard disk (5 marks)
By referring to this diagram, explain its basic method of operation (5marks)
Similarly, explain what the specifications 'Average access time', 'sustained transfer speed' and 'burst transfer speed' refer to. (3 marks)
- b) How does a Solid State Drive (SSD) differ from a conventional rotating hard disk?
State two advantages and one disadvantage of SSDs over conventional Hard Disks. (7 marks)

QUESTION THREE (30 marks total)

Match each definition/term to appropriate word.

No	Definition/Terms	Word	Answer
1	An advantage of the peer-to-peer network model is	selecting the path to destination networks	8
2	Which term is used to refer to a Layer 2 PDU?	bandwidth; throughput	12
3	Which type of Ethernet cable should be used to directly connect two devices that both use the same pins for transmitting and receiving data?	Physical network topology	26
4	How many binary bits exist within an IPv6 address?	SSH	17
5	An example for global routable IP address	Ease of setup	1
6	A _____ centre is a facility used to house computer systems in an enterprise network.	Internet	28
7	At which layer of the TCP/IP model does TCP operate?	Network Interface Card (NIC)	25
8	What role does a router play on a network?	UDP	2
9	What type of program installs and gathers personal information, including password and account information, from a computer without permission or knowledge of the user?	Encapsulation	22
10	What type of device is commonly connected to the Ethernet ports on a home wireless router?	TCP	21
11	Records where each host is located and how it is connected to the network	default gateway	30
12	What terms represent the maximum and actual speed that can be utilized by a device to transfer data?	Frame	7

13	Which type of attack involves an attacker using a powerful computer to try a large number of possible passwords in rapid succession to gain access to a system?	200.165.200.215	5
14	_____ protocol operate at the application layer of the OSI model?	reference model	11
15	Transfer a photo to another phone by touching the two devices to each other	multicast	23
16	_____ is a private IP address	NFC	15
17	_____ provide secured virtual terminal access to remote servers.	HTTP server	29
18	Uses acknowledgements to guarantee delivery	data	6
19	Which IP configuration parameter provides the IP address of a network device that a computer would use to access the Internet?	email	27
20	What type of attack is the ping of death?	FF:FF:FF:FF:FF:FF	19
21	What is a "best effort" protocol well suited for streaming audio and VoIP?		
22	The process of adding additional information to the pieces of data that make up the message in order to ensure that it is delivered to the correct application on the correct destination host	10.1.1.1	16
23	What type of message is sent to a specific group of hosts?	DoS	20
24	_____ is a broadcast Ethernet frame	spyware	9
25	Hardware that enables the device to connect to the network medium, either wired or wireless	255.255.255.255	24
26	Which type of network model describes the functions that must be completed at a particular layer, but does not specify exactly how each protocol should work?	Crossover twisted-pair	23
27	Port 80 is well known port for the _____ server application	Brute force	13
28	Term used to describe the global IP network that results from the interconnection of many independently owned networks	LAN devices	10
29	What type of server would use IMAP?	128	4
30	Which destination IPv4 address does a DHCPv4 client use to send the initial DHCP Discover packet when the client is looking for a DHCP server?	SMTP	18