

Surname

Sant

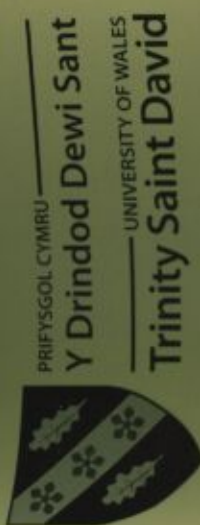
(Block Capitals) Forename(s)

David Thomas

Please complete this section and SEAL before the examination starts.

Complete
section,
remove
strip, fold as
indicated
and SEAL

FOLD



Examination Answer Book

12 Pages

Instructions to candidates

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1	Student Number	2712	List the numbers of the questions you have attempted	Office Use
2	Title of Examination Paper	Capital Architecture & networks	2	24
3	Module Code	ACCA4001	3	13
4	Date and Time of Examination	17/10/18 5:30	4	10
5	Examination Venue	Cardiff City Centre		
6	Seat Number			
7	Number of Answer Books handed in		Total	74

(Gweler yr ochr arall am y fersiwn Cymraeg)

PRIFYSGOL CYMRU
Y Drindod Dewi Sant
UNIVERSITY OF WALES
Trinity Saint David

Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhwch yr holl wybodaeth y gofynnir andani yn y blychau isod.
2. Rhwch eich enw yn y lle a ddarperir i'r dde a selwch i guddio eich enw.
3. Rhaid i'r atebion fod mewn llawysgriflen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgrïpt annarlenadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i ddiol.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thymu llinell drwyddyn.
6. Ni ddylid rhwygo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllw/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.

1	Rhif Myfyrwr		Rhesurwch taliu'r cwestiynau a ymgeisiwyd gennych	At Dibenion y Swyddfa
2	Teid y Papur Arholiad			
3	Cod y Mudiol			
4	Dyddiad ac Amser yr Arholiad			
5	Lleoliad yr Arholiad			
6	Rhif Seid			
7	Nifer y Llyfrau Atebion a gyflwynwyd		Cyfanswm	

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw

(LLYTHRENNAU BREISION) Enw(au) cyntaf

Llewch y
rhan hon
ymwch y
sgrïpyn,
plygach iei
a ddiol
a SELIOWCH

1

i) $27 = 11011$ ✓ $115 = 1110011$ ✓

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

6 ✓

ii) $128 \ 64 \ 32 \ 16 \ 8 \ 4 \ 2 \ 1$

1	0	0	1	1	1	1	1	= 159
0	0	1	0	0	1	1	1	= 39

128	32
31	7
159	39

6 ✓

iii) $BA = 10111010$ ✓

8	4	2	1	$B = 11$	$A = 10$
1	0	1	1	$B = 11$	
1	0	1	0	$C = 12$	

~~16~~ $C3 = 11000011$ ✓

$D = 13$	$E = 14$	$F = 15$
----------	----------	----------

4 ✓

8	4	2	1	$C = 12$
1	1	0	0	$3 = 3$
3	0	0	1	

iv) $30 = 59$ ✓

	8	4	2	1		128	64	32	16	8	4	2	1
3	0	0	1	1		0	0	1	1	1	0	1	1
B	1	0	1	1									

32	16	8	2	1		59
----	----	---	---	---	--	----

F6 = 246 ✓

	8	4	2	1		128	64	32	16	8	4	2	1
F	1	1	1	1		1	1	1	1	0	1	1	0
6	0	1	1	0									

128	64	32	16	4	2	246
-----	----	----	----	---	---	-----

v) 32 different values

32	16	8	4	2	1
----	----	---	---	---	---

vii) $600 \times 400 = 240,000$ ✓

$240,000 \times 3 = 720,000$ bytes 3 ✓

Using 10:1 compression ratio
 $720,000 \div 10 = 72,000$ 2 ✓

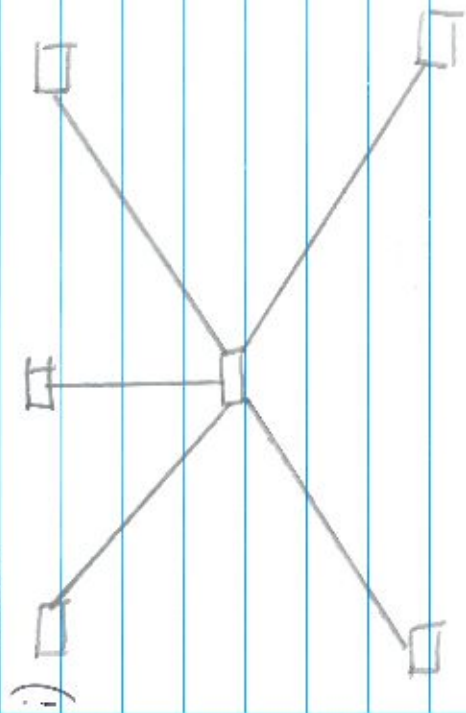
2

Application
Presentation
Session
Transport
Network
Data link
Physical

a)

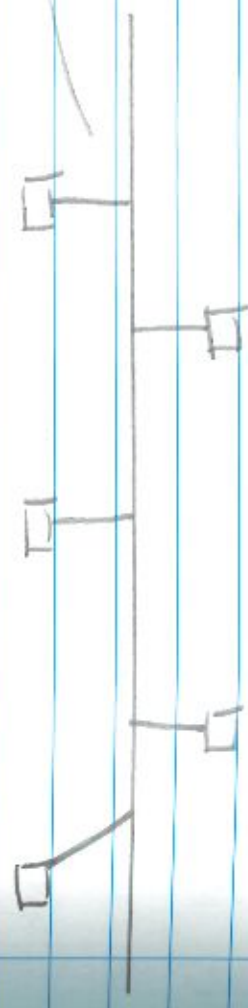
b)

Star



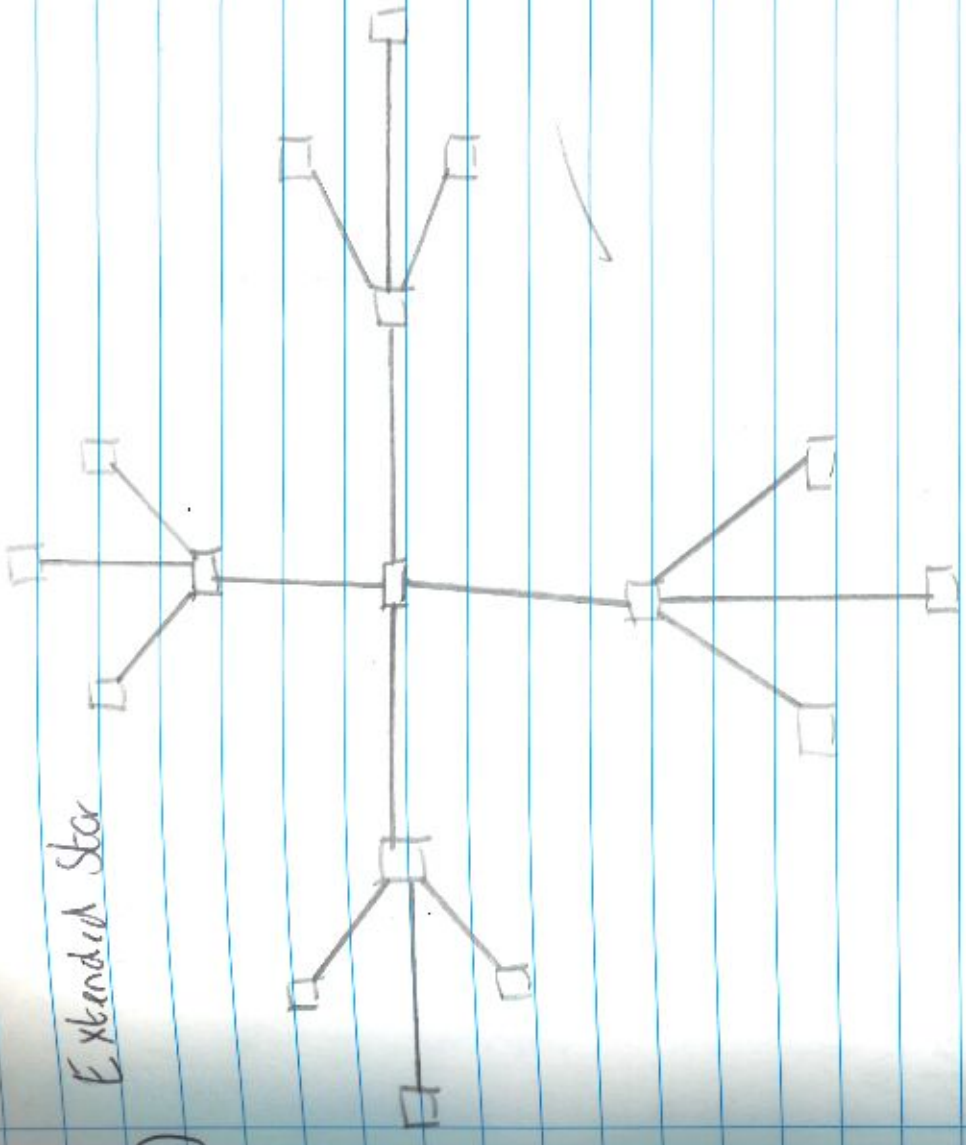
i)

iii) Bus

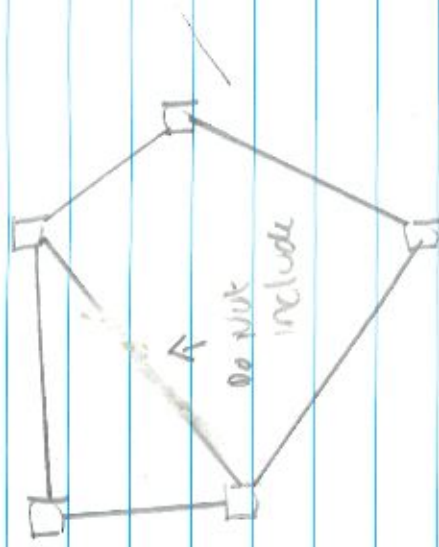


Extended Star

ii)



iv) Ring



c) - Frame

- on datalink layer
- deals with MAC addressing

- packets network

- on Transport layer
- deals with IP addressing

Segment

- on Transport layer
- deals with TCP or UDP

d) duplex (full) is when communication

can be sent across a single line in both directions at the same time.

half duplex is when communication is

sent across a single line in both directions at different times

Simplex is when data communication

can only be sent in one direction.

3

a

A suitable CPU for a Graphic Design PC would be an Intel Core i5

8

The reason for choosing this CPU in particular was because Graphic design software doesn't need something better like an i7 or higher. Choosing this would also save money that could be spent on something else.

2

✓

b

A sensible amount of RAM for Graphic design would be 16 GB

2

The reason for this choice is because software like Photoshop is memory intensive. The prospect it's self might increase or decrease the amount of being used.

2

6

✓

c

For a Graphic Designer, I would recommend a 120 GB SSD as a place to store the operating system and a 2TB Hard Drive for files and storage

4

With the SSD, 120 GB will be plenty of storage as an operating system doesn't take that much space up. So the extra space can be used for another purpose.

4

With the Hard Drive, I see this 2TB is needed because files created within software like Photoshop, files can become very large very fast. Also 2TB drives nowadays are lower in cost and can be picked up cheaper.

d) A Graphic designer ^{could} need many devices to be able to confidently complete work.

Input features

- Mouse - to be able to navigate the computer
- Keyboard - to be able to input text
- Graphics tablets - to be able to manipulate and design graphics with a touch sensitive pen and board.
- Scanner - to be able to input physical objects such as paper and later use them in design.

Ports needed.

- HDD/HDMI - To be able to ~~plug~~ use a single or multiple monitors.
- USB - to attach devices such as a mouse or keyboard to the PC
- Headphones ~~needed~~ part - this will enable someone to plug a pair of headphones or speakers into the system.

Network port - to be able to connect to the local network with a cable.

e) For Graphic design, I would suggest using a ~~video~~ card, something like a GTX 1060

The reason for my choice is because the card has a large amount of VRAM and will be able to ^{improve} ~~increase~~ the output. Like every computer, there's always other options that could have been used but this is popular due to its high performance and the price is reasonable for its ability.

When choosing a Graphics Card, there are a few things that should be considered.

- Fans

Fans are the way that bring fresh air into the card and warm air out of card and then that will help prevent the card breaking. Most newer cards come with an average of 2 to 3 fans and that seems to work well.

- VRAM

VRAM is measured in GB, a typical high end GPU nowadays will be sold with at least 4GB of memory, for majority of people this is more than enough.

4)

Full Backup

Full Backup is when everything is backed up everyday at the week. There are advantages and disadvantages to this:

- protects against file loss

disadvantages -

- takes much longer
- more space is being used
- takes long to set through if needed

different

differentiated is when a backup is taken everyday of the week ~~from~~ the end of the week since the start of the week

This method is

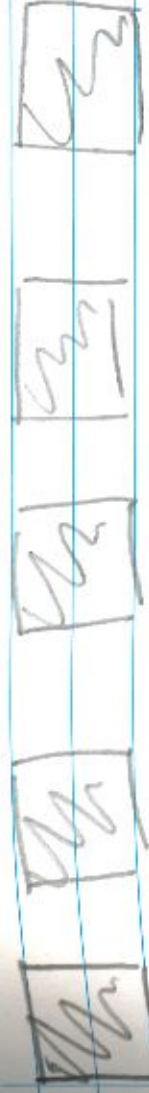
- quicker
- but also harder to set through

Influential

This backs up only the changes from the previous backup.

This method

- saves space
- quicker
- but a backup from another day can't be found.



M T W Th Fr

- All the same

↑ full backup

Magnetic tape - advantages

- cheap to purchase
- easy to replace

disadvantages

- slow at backup

optical media

advantages

- compact for storage
- very cheap to purchase
- large capacity

disadvantage

- easy to damage

External HD

Advantages -

- large capacity
- small form factor
- can replace the physical drive
- portable

Disadvantages

- can be damaged easily

SAN

- large capacity if installed
- can be accessed by multiple people if set up

Disadvantage

- large space taken in room
- large cost to purchase

USB Flash Drive

Advantages

- small form factor
- portable
- larger capacity if needed

Disadvantages

- small - could get lost

Surname

WITHAM

(Block Capitals) Forename(s)

REBECCA ELIZABETH

Please complete this section and SEAL before the examination starts.

FOLD
Complete
this section
before the
examination
startsPRIFYSGOL CYMRU
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Trinity Saint David

Examination Answer Book

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1	Student Number	RW161528	List the numbers of the questions you have attempted	Office Use
2	Title of Examination Paper	COMP ARCH AND NETWORKING	1	16
3	Module Code	ACCA4001	2	22
4	Date and Time of Examination	17/01/2018 5:30pm - 7pm	3	5
5	Examination Venue	COLLEGE SIR GAR. GRAIG	4	4
6	Seat Number			
7	Number of Answer Books handed in		Total	47

(Gweler yr ochr arall am ystyron Cymraeg)

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12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

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3. Rhaid i'r atebion fod mewn llawysgriflen ddarlennadwy. Gall yr Arholwyr naill ai amwybyddu sgrifft annarllennadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn linc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
6. Ni ddylid rhwngo unrhyw ran o'r llyfr hwn; rhaid ci gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwtr/gwyllwyr.
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.

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3	Cod y Modwl		
4	Dyddiad ac Amser yr Arholiad		
5	Lleoliad yr Arholiad		
6	Rhif Seidl		
7	Nifer y Llyfrau Atebion a gyflwynwyd	Cyfanswm	

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw (LLYTHRENNAU BREISION) Enw(au) cyntaf

Llenwch y rhan hon, llymchwch y seicyn, plygwch fel a ddarperir a SELIOWCH

Question 1

[illegible]

$$6115 = 10601101 \quad \times$$

ii

a) $10011111 = 9F$

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

b) $00100111 = 27$

8	4	2	1
1	0	0	1
1	1	1	1
0	0	1	0

Base 10 Not Hex

a) $BA = 10111010$

1	0	1	1	1	0	1	0
8	4	2	1	1			

(iii) B

1	0	1	1				
1	1	0	0				

(iv) C

1	1	0	0				
3	0	0	1				

b) $C3 = 11000011$

1	1	0	0	0	0	1	1
8	4	2	1	1			

[illegible]

$$\begin{array}{r} 128 \\ 64 \\ 32 \\ 16 \\ 4 \\ 2 \\ \hline 246 \\ 12 \\ \hline \end{array}$$

v) 255

vii) $600 \times 400 \text{ pixels} = 240000 \text{ mb}$
8 bits

6	0	0	1	x
2	3	4	0	4
4	0	0	0	0
0	0	0	0	0
0	6	0		

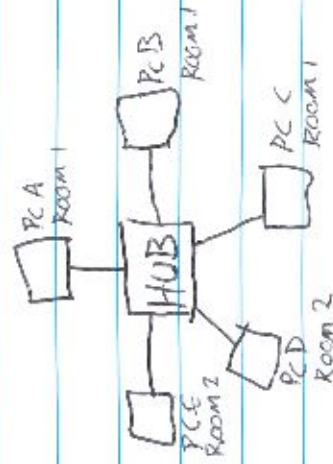
viii) It would reduce in size, this can reduce the quality of the image.
120000 mb

Question 2

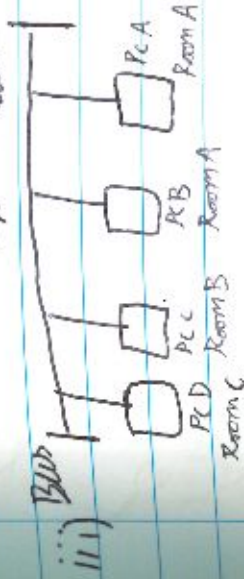
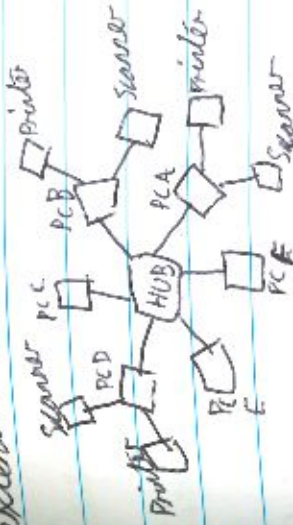
a) Application } LOCAL DATA
Presentation }
Session }
Transport Firewall TCP/UDP PORTS
Network Router IP IP
Data Link Switch Ethernet MAC/NIC
Physical Hub / Media
copper, wire, fibre

b) Physical is location of devices

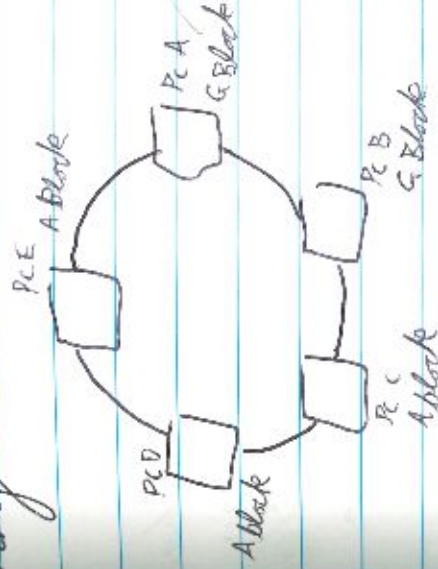
i) Star



extended star



iv) Ring



c) Frames - packets put into frames on Data link layer (MAC+NIC) Ethernet
 Packets - Data gets put into packets on the Network layer (IP)
 Segments - Data gets segmented on the Transport layer (TCP/UDP) ports

d) half duplex - is communication that can be received and replied but not at the same time such as a walkie talkie.

simplex - is communication that gets received but cannot be replied to, such as a radio broadcast

full duplex - is communication that can be sent and received at the same time such as a telephone conversation

Question 3

15. able to keep up but not over ~~over~~ the top line, it suitable for keeping up with detail for graphic design
- 32 GB, additional storage can always be added if needed but this is a good amount for high graphic images.
- 1TB western digital blue hard drive - sturdy, with plenty of storage space.
- A good sized screen 27" mouse, keyboard, drawing tablet to help aid graphic design. 2 ~~more~~ PCI-E slots for motherboard one for graphics card, one as spare, power supply.
- Nvidia GeForce GTX 1060 - needs good graphics to show the user to a high standard how the graphic designs will look. It will be required to keep up with the pixels and being able to zoom in close without graphic issues are required.

I didn't want to overspec the PC. The most important area is the storage, without this the graphics made will not be able to be saved to a high standard. The screen needs to be a decent size to help the user see all the fine details.

Having a drawing tablet is a lot easier than drawing with a mouse, quality of graphic will be high.

Question 4

- Normal - backed up everyday, easy to restore but can take a while.



Differential - ~~backed up every day~~ backs up the data that has been saved ~~since~~ after last backup day after play. As this method saves gradually, it is the quickest, ~~and~~



- Incremental - backs up only on the day, none of the other - this method is not as secure as if data lost you would have to go to the previous backup. Longest way to restore.



- older method of storage. puncher holes, difficult to ~~write~~ overwrite. can be easily damaged if not stored properly.
- ~~When running a server, if you are not backing up the data, you are not backing up the data.~~
CD, DVD, not much space 4.2 DVD, 700GB but quick and easy to transport.
- good storage space, sturdy, bit bulky to carry around, if disk inside damaged all data gets lost. Dropping may cause problems.
- SAN - Storage Area network, bank of hard drives data easy to store however if they are all in

one location and fire flooding were to occur all data would be lost

- v) USB - quick and easy access to ~~data~~ ^{data}, easy to save to. ~~data~~ transportable to other locations easily. However as it is small can be easy to lose. Compact can help as not much to carry around. Small can be damaged easily if dropped then stepped on or crushed.

4
✓

Surname

WILLIAMS

(Block Capitals) Forename(s)

RHYS

Please complete this section and SEAL before the examination starts.

Complete section, remove strip, fold as indicated and SEAL

FOLD



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1	Student Number	RW152938	List the numbers of the questions you have attempted	Office Use
2	Title of Examination Paper	Computer Architecture and Networking	Q1	16 1W
3	Module Code	ACC44001	Q2	24 1W
4	Date and Time of Examination	17/01/2018 5:30pm	Q3	10 1W
5	Examination Venue	Colleg Sir Gwalter	Q4	5 1W
6	Seat Number			
7	Number of Answer Books handed in		Total	55

(Gweler yr isch arall am Ffensiwn Cymraeg)



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6. Ni ddylid rhwygo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyliwr/gwyliwyr.
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.

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

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw (LLYTHRENNAU BREISION) Enw(au) cyntaf

Lleuon y
rhan hon
trwm y
sgrïp,
pligwch fel
a ddangosir
a SELIOWCH

Question 1

i) $27 = 00011011$ ✓
 $115 = 01110011$ ✓

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

27
 -16
 011
 -8
 03
 19
 -16
 03

6 ✓

ii) $10011111 = 159$ ✓
 $00100111 = 39$ ✓

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

128 32
 $2+16+4$
 8
 4
 2
 39
 159
 2

6 ✓

iii) $BA = 11001011$ x
 $C3 = 11010011$ x

	46	8	4	2	
B	1	1	1	1	1
A	1	1	0	1	1
C	1	1	1	0	1
3	0	0	1	1	1

0

iv) $3B = 60 \times 59$ ✓

$F6 = 246$ ✓

	128	64	32	16	8	4	2	1
3	0	0	1	1	1	1	0	0
B	1	1	0	1	1	1	1	0
F	1	1	1	1	1	1	1	0
6	0	1	1	1	1	1	1	0

3 ✓

$$\begin{array}{r}
 32 \\
 16 \\
 8 \\
 + 4 \\
 \hline
 60 \\
 2 \\
 + 2 \\
 \hline
 246 \\
 12
 \end{array}$$

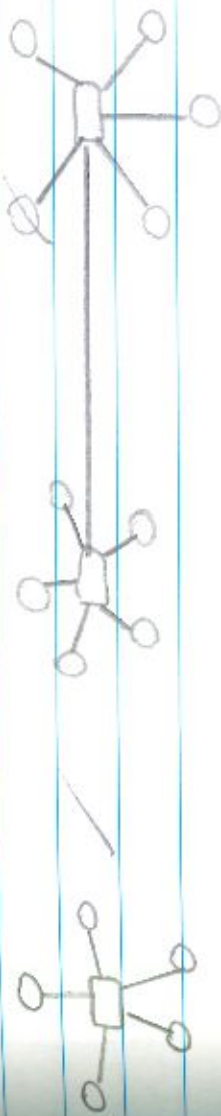
$$\begin{array}{r}
 32 \\
 16 \\
 8 \\
 4 \\
 2 \\
 + 1 \\
 \hline
 63 \\
 2
 \end{array}$$

$$\begin{array}{r}
 240,000 \\
 \begin{array}{|c|c|c|c|}
 \hline
 600 & 200 & 200 & 400 \\
 \hline
 200 & 200 & 200 & 200 \\
 \hline
 400 & 200 & 200 & 200 \\
 \hline
 200 & 200 & 200 & 200 \\
 \hline
 \end{array}
 \end{array}$$

Question 2

- a) Application
Presentation
Session
Transport
Network
Data Link
Physical

- b) Star: Extended Star:



Bus:



Ring:



- c) Frames are created at the data link layer and use MAC addressing

Packets are created at the Network layer of the OSI 7 layer model and use IP addressing

Data is segmented using TCP or UDP at the transport layer. They use ports as their addressing.

d) half duplex refers to 2 way communication but ~~data~~ ^{traffic} can only travel one way at a time. If data is travelling one way then traffic ~~can~~ going the other way is halted until the other traffic is finished.

Simplex refers to data that can only travel one way. It is not able to travel in both directions. An example of simplex communication would be via radio.

full duplex communication refers to traffic that can travel in both directions at the same time.

An example of full duplex would be telephone communication as 2 people talking at the same time can be heard at the other end.

Question 3

If I was to choose a CPU for a high-end graphic design PC I would choose an Intel i7 skylake CPU. These types of CPUs have a clock rate of over 3GHz which is enough processing power to meet the requirements of high end design software. Other brands do not offer a similar clock rate but tend to be more expensive. As well as that the Intel i7 can be overclocked to just under 4GHz. The PC would need at least 8GB of DDR3 RAM and ~~can~~ would not need more than 32GB of DDR4 RAM. I would go for 16GB of DDR3 RAM as that would meet the requirements of software and would be enough to enable multiple window tasks. As for a brand I would go for Kingston. I believe that they offer more support for

People who may not be as technically minded which is good for building trust within the consumer. As for non-volatile storage I would recommend a 120SSD (m.2) for the OS, as they are cheap and are faster than standard SSDs. I would then consider a 240GB standard SSD that would hold software that will be used to create the images. Both would be from Kingston, again for support, but they also offer ~~more~~ ^{free} monitoring software that can maintain the health of the SSDs. Finally I would have a 2TB Western digital black HDD. These types of HDD have extended warranties which are much longer than any other HDD manufacturer I would hold images on this 2TB drive. I turns out peripherals I would go for standard key board and mouse, Dell graphics card, which is a massive touch screen that has precision stylus and colour pad, and 27" full HD 1080p dell monitor. The reason I choose dell for the monitor is because it can work with the canvas to move images between the 2 screens. The dell monitors also have display port and built in speakers, which I think are better than the other brands. Finally I would get an Nvidia Quadro card ~~with~~ ^{with} 4GB that can connect to the or board PCIe slots on the motherboard. The Quadro card also has 3 display port connectors so there is the possibility to add a second monitor. Quados are also designed for graphic design compared to GeForce gaming graphics cards. They are also cheaper compared to the GeForce cards.

peripherals I would go for standard key board and mouse, Dell graphics card, which is a massive touch screen that has precision stylus and colour pad, and 27" full HD 1080p dell monitor. The reason I choose dell for the monitor is because it can work with the canvas to move images between the 2 screens. The dell monitors also have display port and built in speakers, which I think are better than the other brands. Finally I would get an Nvidia Quadro card ~~with~~ ^{with} 4GB that can connect to the or board PCIe slots on the motherboard. The Quadro card also has 3 display port connectors so there is the possibility to add a second monitor. Quados are also designed for graphic design compared to GeForce gaming graphics cards. They are also cheaper compared to the GeForce cards.

Question 4

a) Normal backups happen daily and back up the whole system. If ~~numbers~~ the files once they have been backed up and is the easiest method for recovery. As it takes a backup of the whole system it is also the longest and heaviest on space.

Differential ~~Incremental~~ backups take a system backup on a certain day of the week and then back up what was changed on that day. In order to recover data you would need to recover the last whole backup and every ~~back~~ daily back up, up until the data corruption.



Incremental backups take a system backup on a certain day and back up everything that was changed since the last full backup. This means that this is the quickest way to recover data should corruption occur.



b)

i) Optical media refers to CD-ROMs or floppy disks. An advantage of storing on these physical media is that data can be transported or viewed on different PCs. The disadvantage is that they have low capacity and data is lost if the physical media is damaged or destroyed.

ii) External hard drives have high capacity and quickly access data. They do this by writing to a disk known as a platter. The platter is then segmented into sections where data can be stored. These sections can be damaged and data will not be able to be stored in that sector.

iii) Storing ~~area~~ networks consist of 2 racks. One is full of hard drives and the other is a controller that can monitor the health of the disks and report if one is broken. If the controller goes down then the whole system goes down.

iv) USB flash drives have low capacity but quick access. They are good for moving data from one place to another as they are physically smaller than other media.

Surname

Davies

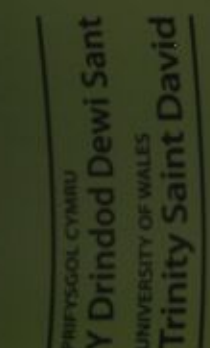
(Block Capitals) Forename(s)

Jake

Please complete this section and SEAL before the examination starts.

PLEASE DO NOT
REMOVE THIS
SECTION
FROM THE
BOOK

FOLD



Examination Answer Book

12 Pages

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1	Student Number	56725	Office Use	
2	Title of Examination Paper	Computer Architecture + Networking	List the numbers of the questions you have attempted	24 72
3	Module Code	ACCA1001		18 81
4	Date and Time of Examination	17/10/2018 5:38 - 7:38		3 31
5	Examination Venue	Graig-645		4 41
6	Seat Number	N/A		
7	Number of Answer Books handed in		Total	69

(Gweler yr ochr arall amcylchwr Cymraeg)

PRIFYSGOL CYMRU
Y Drindod Dewi Sant
UNIVERSITY OF WALES
Trinity Saint David

Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhwch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn y lle a ddarperir i'r dde a seliwch i guddio eich enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholiwr naill ai anwybyddu sgrïp amartlenadwy, neu drefnu iddi gael ei theipio a chlael 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 thynnwch llinell drwyddynl.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os debyddur i'w nag un llyfr, rhwyngwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwylywr.
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.

1	Rhif Mylyniwr	Rhestrwch rifau'r cwestiynau a ymgeisiwyd gennyh	At Dibenion y Swyddia
2	Teitl y Papur Arholiad		
3	Cod y Modyn		
4	Dyddiad ac Amser yr Arholiad		
5	Lleoliad yr Arholiad		
6	Rhif Sedd		
7	Nifer y Llyfrau Atebion a gyflwynwyd	Cyfanswm	

(See the other side for English version)

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw (LLYTHRENNAU BREISION) Enw(au) cyntaf

1. i)

a) 27

16 8 4 2 1

1 1 0 0 1

~~1000101~~

= 00011011

b) 115

⁹⁶
+ 19
115

64 32 16 8 4 2 1 = 01110011

1 1 1 0 0 1 1

ii)

a) 10011111

¹²⁸
+ 31
159

128 64 32 16 8 4 2 1 + 31

1 0 0 1 1 1 1 1 159

= 159

b) 00100111

32 16 8 4 2 1 32

1 0 0 1 1 1 + 7

39

= 39

iii) a) BA

8421

B = 11 = 1011

A = 10 = 1010

= 10111010

b) C3

8421

C = 12 = 1100

3 = 3 = 0011

= 11000011

iv)

a) 3B

1286632168621

8421

$$3 = 3 = 0011 \quad 48 = 59$$

$$B = 11 = 1011$$

b) F6

255

$$F = 15 = 1111 = 11110110 + 96214$$

$$b = 6 = 0110 \quad 224 + 82 = 246$$

v) 6⁶

36

11111

000000

36

answer

vii) 600x400 on 8bit Channel

600 600 0

2	4	0	0	4
4	0	0	0	0
0	0	0	0	0
0	0	0	0	0

240000

$$\times 3 \quad 1920000$$

1920000 bits

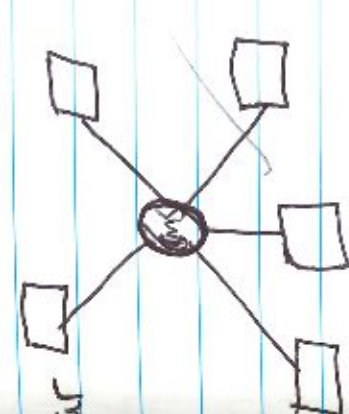
viii) Compressing the file into a JPG would reduce the file size and image quality by making the image use less colours and a lower pixel count. it would reduce it by about 10%

2)

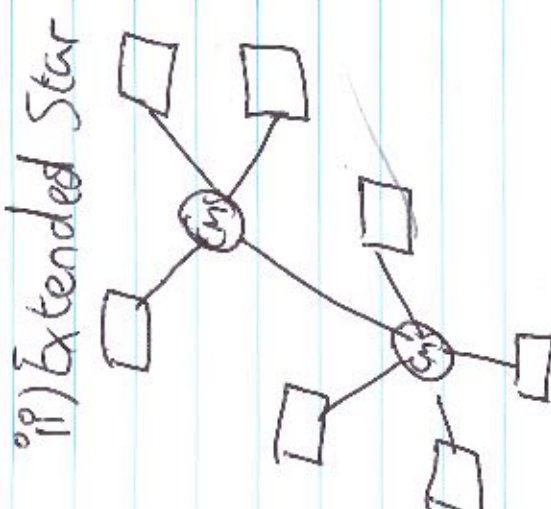
- a) Application
- Presentation
- Software
- Transport

Network
Data Link
Physical

b)

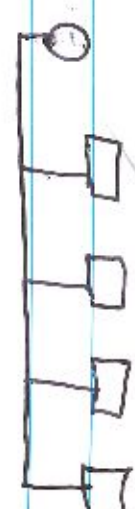


i) Star

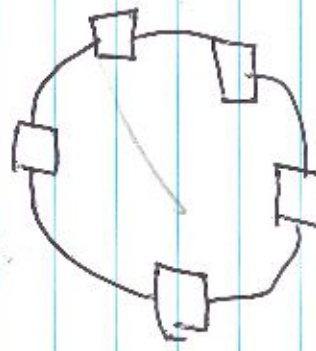


ii) Extended Star

iii) Bus



iv) Ring



- c) Frames - Physical - Ethernet
- Packets - TCP/IP
- Segments - DATA LINK - MAC
- Network

d) HALF DUPLEX

Can transport data to and from a device, but can only transmit data one at a time. So data must wait to be sent before it can receive.

SIMPLEX

Can only transport data in one predetermined way (so either send or receive).

FULL DUPLEX

Can freely transport data to and from a device simultaneously.

3) LIST

- a) Intel i5 Quad core Processor (3.6Hz minimum) ✓
- b) Between 8 + 16 GB RAM ✓
- c) Hard Disk Drive of either 1 or 2 TB and an SSD Drive of 120 - 240 GB for operating system ✓
- d) USB 3.0 ports (4 minimum), PCIe Slot, HDMI port, Graphics Tablet ✓
- e) Nvidia GeForce GTX 1060 (6 GB) as graphic design software can be demanding ✓

Explanation

- a) As the user will be multitasking it is important for them to have a stable processor with multiple cores and fast speeds. The i3 isn't powerful enough and the i7 may be overkill. ✓

- 6) Depending on the software, most graphical software are resource hungry and require a lot of memory. So dependent on that is whether they'll require 8 or 16 GB. ✓

- c) Firstly, the SSD for the OS and applications is to ensure high speeds and loading time reduction, however some graphical software can be quite large in size so a 240 GB may be suitable. ✓

The extra HDD is for storage as BMP images can be huge at times. ✓

- d) USB slots are self explanatory, nearly every device uses them. PCIe slot is needed for GPU / HDMI for display and a graphics tablet for high quality digital drawing. ✓

- e) as the GUI for graphical software and rendering can be quite intensive on high end GPU work be required. It is cheaper and just as reliable as cards of similar specs. ✓

41

a)

	Full	Incremental	Differential
SUN	Full Backup	Full Backup	Full Backup
MON	Full Backup	Backup updated from DAY 1	Backup updated from DAY 1
TUES	Full Backup	Backup updated from DAY 2	(1 1)
WED	Full Backup	Backup updated from DAY 3	(1 1)
THURS	Full Backup	Backup updated from DAY 4	(1 1)
FRI	Full Backup	Backup updated from DAY 5	(1 1)
SAT	Full Backup	Backup updated from DAY 6	(1 1)
SUN	Full Backup	Full Backup	Full Backup

A full backup is completing an entire backup every day, this means every file is copied every day even if it went unchanged.

An incremental backup is backing up files that have been changed each day, so files that are different from the previous day.

A differential backup is backing up all files that have been changed since the full backup, until the next one each day.

6) Magnetic Tape

Advantages
 Large Storage Size
 Rewritable

Disadvantages
 Slow write speed
 Outdated

ii) Optical Media

Advantages
 Fast media storage
 Usable across multiple devices

Disadvantages
 Slow write speed
 Low capacity
 Fragile
 Insecure

iii) External Hard Drive

Advantages
 Can store large amounts of data
 Fast transfer rates (USB3)
 Portable
 Can be encrypted

Disadvantages
 Heavy
 Loud
 Fragile

iv) SAN

Advantages
 Can share data
 Private using permissions
 Accessible across several devices
 Expandable storage

Disadvantages
 Can be accessed by anyone on network (unless)
 Slows down in high traffic

V) USB FLASH DRIVE

Advantages

Small / Compact / Portable ✓

Varying Number of Sizes (1-500GB)

Fast read / write speeds

Powered by USB

Disadvantages

Can be lost / Stolen easily

Smaller than other Methods

Less reliable than HDD's

✓

Surname

EVANS

(Block Capitals) Forename(s)

CALVIN

Please complete this section and SEAL before the examination starts.

Complete
section,
remove
strip, fold as
indicated
and SEAL

FOLD

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Y Drindod Dewi Sant
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Trinity Saint David

Examination Answer Book

12 Pages

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1	Student Number	61782471	List the numbers of the questions you have attempted	Office Use
2	Title of Examination Paper	Computer Applications and networking	1	27
3	Module Code	ACCA4001	2	24
4	Date and Time of Examination	30/07/18	3	41
5	Examination Venue		4	2
6	Seat Number			
7	Number of Answer Books handed in	1	Total	114

(Gweler yr ochr arall am y ffrisiwn Cymraeg)

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Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

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4. Ysgrifennwch eich atebion mewn inc.
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6. Ni ddylid rhwygo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch lwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwylywyr.
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.

1	Rhif Myfyrwr	Rhesurwch titlau'r cwestiynau a ymgeiswyd gennyh	At Dibenion y Swyddfa
2	Teitl y Papur Arholiad		
3	Cod y Modwl		
4	Dyddiad ac Amser yr Arholiad		
5	Lleoliad yr Arholiad		
6	Rhif Sedd		
7	Nifer y Llyfrau Atebion a gyflwynwyd	Cyfanswm	

(See the other side for English version)

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw _____ (LLYTHRENNAU BREISION) Enw(au) cyntaf _____

Llenwch y
rhan hon,
tynnwch y
sribyn,
plygwch fel
a dangosir
a SELIWCH

Question 7

i) a)

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

 27 = 11011 ✓
11 3

b)

0	1	1	1	0	0	1	1
---	---	---	---	---	---	---	---

 115 = 1110011 ✓
52 19 3

ii) a)

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

 1001111 = 159 ✓
128 144 152 156 159

b)

0	0	1	0	0	1	1	1
---	---	---	---	---	---	---	---

 10011 = 39 ✓
32 36 39

iii) a)

8	4	2	1
1	0	1	1
1	0	1	0

 BA = 1011010 ✓

b)

1	1	0	0
3	0	0	1
1	1	0	0

 C3 = 11000011 ✓

iv) a)

8	4	2	1
3	0	0	1
1	0	1	1

 32 16 8 4 2 1
32 48 56 59 3B = 59 ✓

b)

128	64	32	16	8	4	2	1
1	1	1	1	0	1	1	0
128	192	224	240				

 F6 = 246 ✓

v) 63

0

vii) $600 \times 400 = 240000 \text{ pixels}$
 $\frac{240000}{3} = 80000 \text{ Bytes}$

3 ✓

Approx. 7200 KB

viii) Standard JPG compressing will reduce the file size by a ratio of 10:1. So 7200 KB would become 720 KB.

2 ✓

Question 2

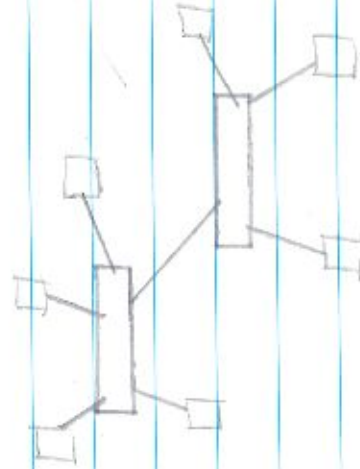
- a)
- | |
|--------------|
| Application |
| Presentation |
| Session |
| Transport |
| Network |
| Data Link |
| Physical |

5 ✓

b) i. Star



ii. Extended Star

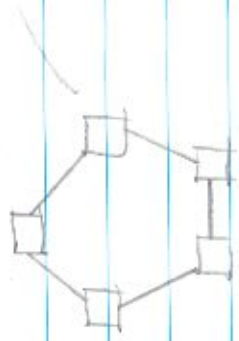


8 ✓

iii. Bus



iv. Ring



	Addressing	Layer
c) Datagram	MAC	Data Link
Frames	IP	Network
Packets	Port	Transport
Segments		

d) In a simplex connection the data can only be transmitted in one direction.



A can only send data to B.

In a half-duplex connection, both ends can send and receive. But only in one direction at a time.



or



A sends to B, After wards B can send to A

In a full duplex connection both ends can communicate both ways at the same time.



A and B both send.

Question 3

As the PC required is a high-end graphic design PC. It will require a better CPU than a standard user PC. The creative software packages like Photoshop and Illustrator tend to be resource intensive and require a responsive feel. I would recommend a 4 core processor like the Intel i5. 2✓

Rendering and editing images tends to be some of the most memory intensive tasks for a PC. So I would use 16GB of DDR4 RAM (2 sticks of 8GB). 3✓

The user could be working on raw, uncompressed image files so they would require more storage space than a regular user. I would start with a 2TB HDD like the WD Caviar Blue. I would also leave space on the inside to potentially use more. If the user was using the PC frequently / if they were impatient. Then I would recommend a small SSD (128GB) in order to hold the OS and Photoshop. This would result in faster booting and Photoshop would start up faster. 4✓

The PC should have at least two USB 3.0 ports on the front and the back. The user will have to have a graphics tablet always connected (Wacom Cintiq) and they might be using USB sticks or external drives to transfer large files. If they are going to work with photographers then they might benefit from a card reader for all the SD card types. 3✓

While image editing does require a decent amount of VRAM. It isn't going to require as much as a video editor or a game. 2GB of onboard VRAM should be more than enough. So a GTX 1050 should work. Cheaper options should work. It should have the recent video ports. HDMI for its widespread use and DisplayPort for its 4K support and because the connector locks in place. 2✓

For a graphic design PC one of the most important peripherals is the monitor. It would have to have IPS panels as they maintain the correct colour when viewed from any angle. The Acer monitors over £200 should be IPS.

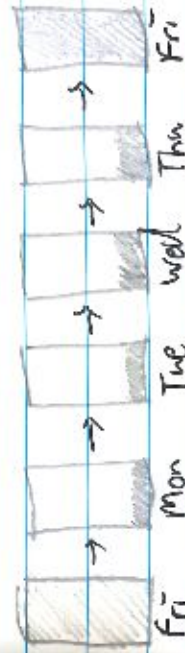
Question 4

a) Full Backup



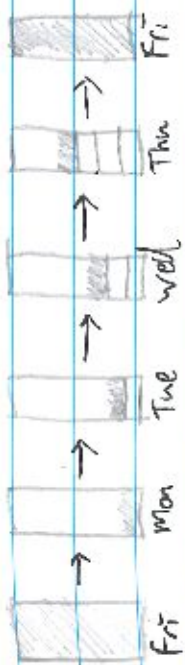
In a full backup you take a full backup of all the data every day onto different media. This results in the longest time to backup as the entire process is repeated daily. But it is the easiest to restore from as you just need to get the tape from the previous day.

b) Incremental Backup



In an incremental backup you only backup the new data that is generated since the last full backup and the previous backup. This is the quickest as it only requires you to backup the new data each day (apart from full backup days). But this takes the longest to restore as you have to retrieve the last full backup and each day that's been backed up since.

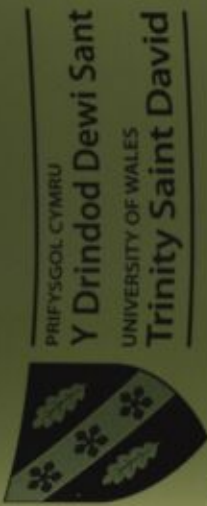
Differential Backup



In a differential backup

Surname **WADDINGTON**(Block Capitals) Forename(s) **STEVE****VAN**

Please complete this section and SEAL before the examination starts.



Examination Answer Book

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1	Student Number	7867600MS	Office Use	
2	Title of Examination Paper	Computer Arch + Networking	List the numbers of the questions you have attempted	1 20
3	Module Code	ACCA4001		2 22
4	Date and Time of Examination	17/01/2018 17:38		3 21
5	Examination Venue	Coleg Sir Gar		4 10
6	Seat Number			
7	Number of Answer Books handed in		Total	64

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Llyfr Atebion Arholiadau

12 Tudalen

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7. Os defnyddir mwy nag un llyfr, rhwyngwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwyllwyr.
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.

1	Rhif Myfyrwr		Rhesurwch rhan yr cwestiynau a ymgeisiwyd gennych	At Dibenion y Swyddfa
2	Teitl y Papur Arholiad			
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5	Lleoliad yr Arholiad			
6	Rhif Sedd			
7	Nifer y Llyfrau Atebion a gyflwynwyd		Cyfanswm	

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw _____ (LLYTHRENNAU BREISION) Enw(au) cyntaf _____

Llenwch y rhan hon, bwrwch y sarnyn, plygwch iei a ddefnyddio'r a SELIO WCH

128 64 32 16 8 4 2 1
 i) a) 0 0 0 1 1 0 1 1 = 27 ✓
 b) 0 1 1 1 0 0 1 1 = 115 ✓

6 ✓

wt ~~exp~~ ~~wt~~

128 64 32 16 8 4 2 1
 ii) a) 1 0 0 1 1 1 1 1 = 159 ✓
 b) 0 0 1 0 0 1 1 1 = 39 ✓

6 ✓

8 4 2 1 8 4 2 1
 iii) a) 1 0 1 1 1 0 1 0
 b) 1 1 0 0 0 0 1 1

4 ✓

8 4 2 1 8 4 2 1
 iv) a) 0 0 1 1 1 0 1 1 = 59 ✓
 b) 1 1 1 1 0 1 1 0 = 247 246 x

v) $2^6 = 64$ $2 \times 2 \times 2 \times 2 \times 2 \times 2$ ✓

2 ✓

vii) $600 \times 400 \times 3 = 240,000$ bytes pixels
 3 comes from RGB 3 colours (1 byte per channel)

1 ✓

viii) $240,000 \div 10 = 24,000$
 jpeg compression ratio 10:1

1 ✓

Question 2

a) OSI Layer 7 Model

- 7 Application
- 6 Presentation
- 5 Session
- 4 Transport
- 3 Network
- 2 Data
- 1 Physical

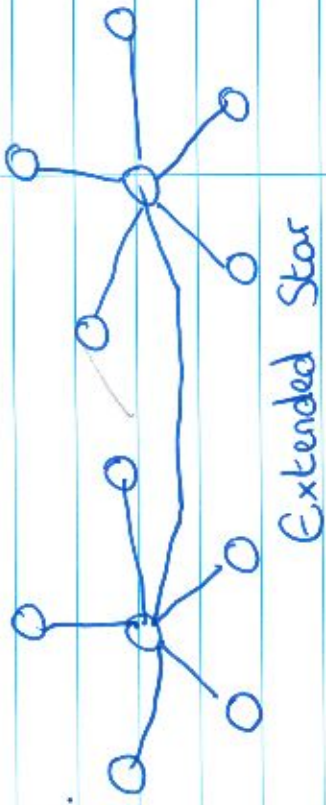
5 ✓

b) i.



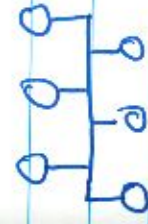
Star

ii.



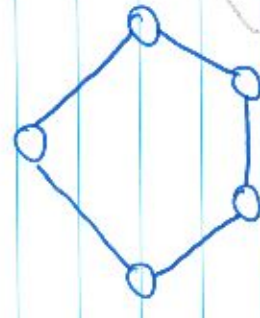
Extended Star

iii.



Bus

iv.



Ring

8 ✓

- c) Frames = Layer 2 Data ^{Link} MAC Address
 Packets = Layer 3 Network IP Address
 Segment = Layer 4 Transport Port Numbers

5 ✓

d)

- full duplex = No Collisions as the media traffic flows both ways
- half duplex = Single packet on the media at a given time, Collision avoidance in place
- Simplex = first come first serve, no collision detection highly inefficient

4

4 ✓

Question 3

a) CPU - Intel i7 with a base of 3.7GHz and a turbo of 4.7GHz or greater if overlocked, reason being if intended for a high end Graphic Design PC it will have to cope with multiple tasks at once that will consume processing power. But with the i7 6cores and up to 12 threads should make any task a walk in the park. 4✓

b) RAM - Regarding the RAM its suggested that 8GB can handle heavy use but for Graphic Design its best to have a comfortable amount of 16GB to handle the tasks that will need processing the multiple tasks such as multiple software programs running, live chalking if needed. 2✓

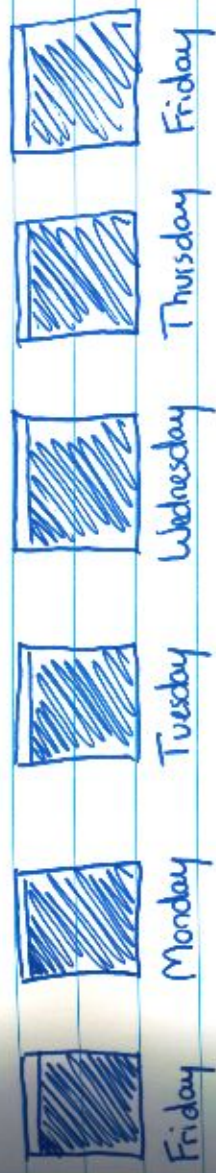
c) NVS - At a minimum you would expect a 1TB SSD because of the ~~large~~ file sizes involved with Graphical Design, SSD is great for performance because of it hyper fast loading and how responsive it is. 1✓

d) As for the Inputs and outputs, at a minimum you want Multiple monitor outputs which can handle a resolution of UHD which is a must for Graphical design, your typical USB 3.0 ports for any External Storage, Mouse/Keyboard ~~Inputs~~ 4✓

e) Graphics Card - As mentioned above the graphic card must have multiple monitor ports that support UHD with a 1✓

Question 4

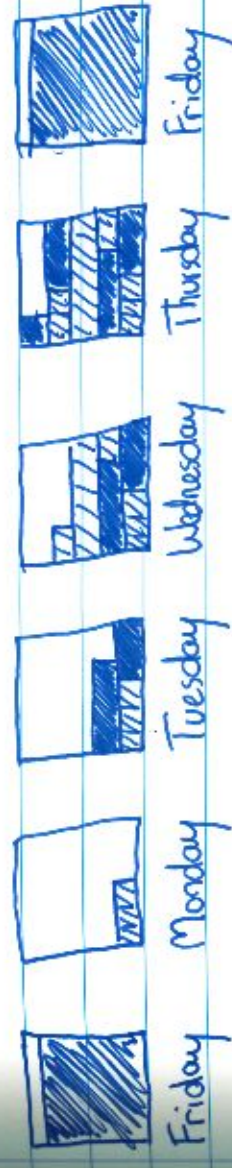
- a) Full Backup or Normal backup is exactly what it says it stores all data to whatever storage system you have in place whether its a NAS or additional HDD in your PC. Its recommended that a full back up is done on a weekly basis to save on resources and storage. For the illustration a backup has been carried out daily



- Incremental Backups - Incremental backups only save changes that have been made on that day, its great and preferred to most because it saves storage and resources as the backups don't take long to do. The illustration below shows how only the changes are stored to save resources and storage.



Differential Backups are very similar to Incremental however has its difference it still saves the changes made but stores data from the Last Full backup, which consumes more memory than Incremental but less than a full backup. As you can see from the illustration each day the data is stored and keeps adding which is consuming resources and storage.



b) i - Magnetic tape - Unreliable, damaged easily, low storage capacity.

ii - Optical Media. - Fast transfers, reliable media,

iii - External HD are great for backups, can be stored away neatly, USB 3.0 is very helpful when it comes to using EHD because of the transfer speed of 640bps. Disadvantage is that they can be damaged easily, lost

iv - Storage Area Networks are great they are Modular so capacity can be increased, hidden away out of sight, disadvantage is that they need configuring and also come with a high price tag.

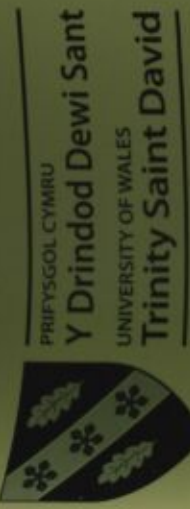
v - Flash drives very similar in terms of EHD supported by USB 3.0 come in different capacities but with the same disadvantage.

Surname

Blaue

(Block Capitals) Forename(s)

Please complete this section and SEAL before the examination starts.

FOLD
Complete
seal as
indicated
and SEALPRIFYSGOL CYMRU
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Examination Answer Book

12 Pages

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1	Student Number	18075880	List the numbers of the questions you have attempted	Office Use
2	Title of Examination Paper	CANTER ARCHITECTURE AND NETWORKING	1	19
3	Module Code	ACC A 4001	2	22
4	Date and Time of Examination	17/01/2019 17:30	3	8
5	Examination Venue	COLES SIR GPR	4	9
6	Seat Number			
7	Number of Answer Books handed in		Total	58

(Gweler yr ochr arall am yersiwn Cymraeg)

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Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhewch yr holl wybodaeth y gofynnir andani yn y blychau isod.
2. Rhewch eich enw yn y lle a ddarperir i'r dde a selwch i guddio cich enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgript annarllennadwy, neu drefnu iddi gael ei llecio 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 thynnwch llinell drwyddlyn.
6. Ni ddylid rhwygo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwylywyr.
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.

1	Rhif Myfyrwr	Rhestrwch rifau'r cwestiynau a ymgeisiwyd gennydd	At Ddbecion y Swyddfa
2	Teitl y Papur Arholiad		
3	Cod y Modwl		
4	Dyddiad ac Amser yr Arholiad		
5	Lleoliad yr Arholiad		
6	Rhif Sedd		
7	Nifer y Llyfrau Atebion a gyflwynwyd		Cyfanswm

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw (LLYTHRENNAU BREISION) Enw(au) cyntaf

Llefron y
mar hon,
byrionch y
sillydd,
plygwrch i
a clyngwrch
a SELIOWCH

Question 1

i) a) $00001011 = 27$

b) $01110011 = 115$

ii) a) 159

b) 39

iii) a) 10111010

b) 11000011

iv) a) $00111011 = 59$

b) $11110110 = 246$

v) 63

vii) $600 \times 400 = 240000 \text{ Bits pixels}$

$240000 \times 3 = 720000 \text{ Bytes}$

$= 720 \text{ KBytes}$

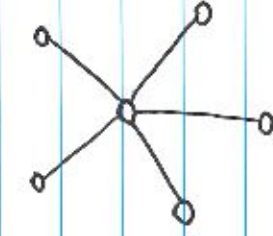
viii) $\text{Jpeg Compression Ratio} = 10:1$

$720\% 10 = 72 \text{ KB}$

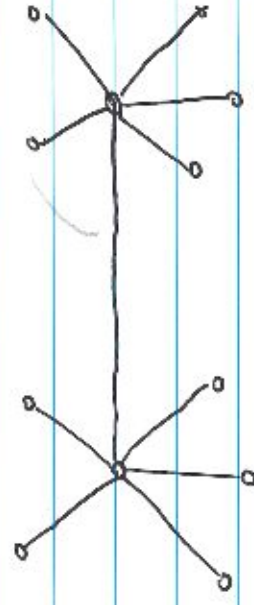
Question 2

OSI Model

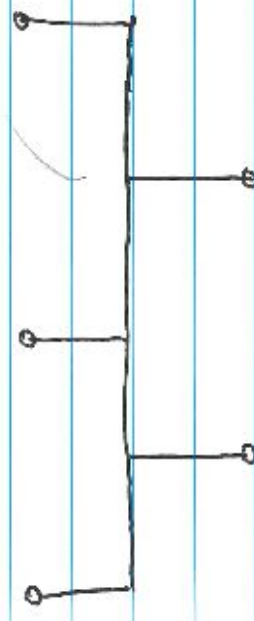
- 1 APPLICATION
 - 2 PRESENTATION
 - 3 SESSION
 - 4 TRANSPORT
 - 5 NETWORK
 - 6 DATA LINK
 - 7 PHYSICAL
- 7 LAYERS



i) STAR



ii) Extended STAR



iii) BUS



iv) RING

c) FRAMES = MAC ADDRESS = DATA LINK Layer 2

Packets = Internet Protocol (IP) = Network Layer 3
IPv4 or IPv6

Segments = UDP or TCP = Transport Layer 4
Port Numbers

a) Half Duplex = Nodes can only transmit data
one at a time.

Simplex

Full Duplex = Nodes can send and receive data
simultaneously at the same time.

Question 3

a) CPU = Clock Rate = 3 GHz + Instructions Per Cycle
Cores = 4 To Carry out Multiple tasks at once

b) RAM = 16 GB To cover any speed or performance
related issues.

c) SSD = 1TB of memory

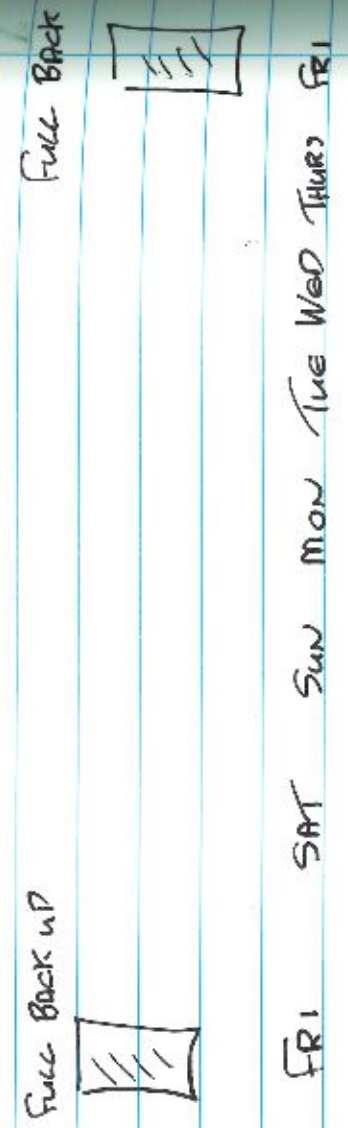
SSD for fast loading times and almost instant
responsiveness

d) USB 3.0 = 640 MB/s per second through port
HDMI = Monitor
1080

Question 4

a) Normal Back up

Normal back up copies all selected files and all its entirety every time as a full back up. This process takes the longest to perform the back up. But it is the simplest way to ~~recovery~~ recover data as it recovers the most recent ~~Back up~~ Full Back up



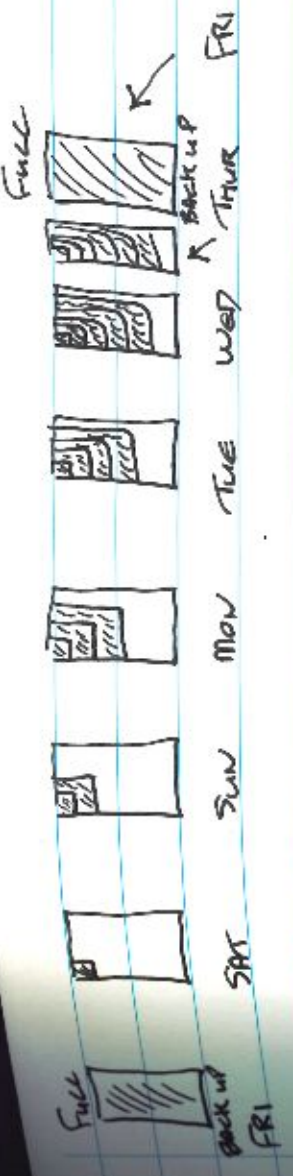
Differential Back up

Differential Back up works by carrying out a full back up. Then ~~any~~ only backs up changes since the last back up ~~any~~.

For example:

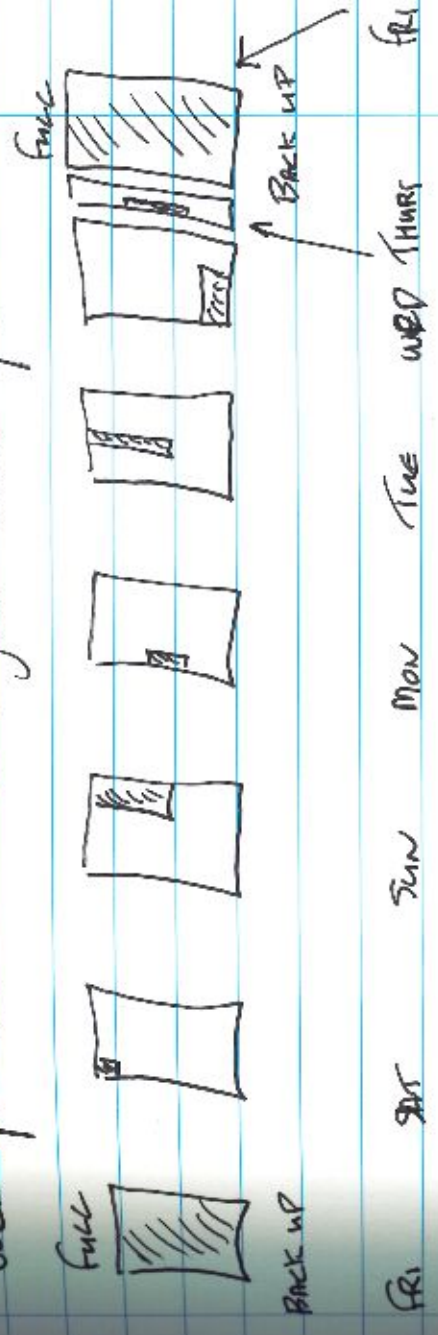
- FRIDAY NIGHT: Full Back up
- SATURDAY: Backs up DATA FOR SATURDAY
- SUNDAY: Backs up SATURDAY AND SUNDAY
- MONDAY: Backs up SATURDAY, SUNDAY, MONDAY

And so on until the next full back up.



Incremental Back up

Incremental back up only backs up files that have been changed or created since the last full back up until the next full back up.



6)

- i) MAGNETIC TAPE
 - ADVANTAGES: CHEAP
 - DISADVANTAGES: LONGER TO RECOVER DATA
- ii) OPTICAL MEDIA
 - ADVANTAGES: FAST READ/WRITE, SPEEDS
 - DISADVANTAGES: TO GO WARE, HARD TO RECOVER DATA
- iii) EXTERNAL HARDWARE
 - ADVANTAGES: PORTABLE, PLenty OF SPACES
 - DISADVANTAGES: TO GO WARE, HARD TO RECOVER DATA
- iv) SAN
 - ADVANTAGES: PLenty OF SPACES, DIFFERENT RPD CONFIGURATIONS
 - DISADVANTAGES: EXTENSIVE
- v) USB FLASH DRIVE
 - ADVANTAGES: PORTABLE, CHEAP
 - DISADVANTAGES: FAST READ/WRITE, SPEEDS

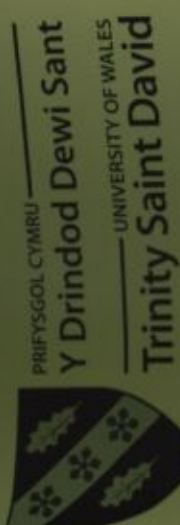
Surname

STRAHAN

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(Block Capitals) Forename(s)

STEPHEN KYLE

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section,
remove
strip, fold as
indicated
and SEAL

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1	Student Number	180079	Office Use	
2	Title of Examination Paper	Computer Architecture and Networking	1	24
3	Module Code	1004V22V	2	18
4	Date and Time of Examination	21/02/2018 5:38 PM	3	11
5	Examination Venue	549 J. J. Cole yr	4	71
9	Seat Number			
7	Number of Answer Books handed in			
	Total			69

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Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeisyrr

- Rhowch yr holl wybodaeth y gofynnir andani yn y blychau isod.
- Rhowch eich enw yn y lle a ddarperir i'r dde a seliwch i guddio eich enw.
- Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu script annarlenadwy, neu drefnu iddi gael ei thipio a chael yr ymgeisydd i dalu.
- Y sgrifennwch eich atebion mewn inc.
- Dechreuwch bob aeb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
- Ni ddylid rhwygo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
- Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwylwr/gwylwyr.
- 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.

1	Rhif Myfyrwr		Rhestrwch rifau'r cwestiynau a ymgeistwyd gennyh	At Ddibenion y Swyddfa
2	Teitl y Papur Arholiad			
3	Cod y Modwl			
4	Dyddiad ac Amser yr Arholiad			
5	Lleoliad yr Arholiad			
6	Rhif Sedd			
7	Nifer y Llyfrau Atebion a gyflwynwyd			Cyfanswm

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw

(LLYTHRENNAU BREISION) Enw(au) cyntaf

	128	64	32	16	8	4	2	1
i) a.	0	0	0	1	1	0	1	1
b.	0	1	1	1	0	0	1	1
ii) a.	1	0	0	1	1	1	1	1
b.	0	0	1	0	0	1	1	1

i) a) $27 = 00011011$ ✓

$$\begin{array}{r} 27 \\ -16 \\ \hline 11 \\ -8 \\ \hline 3 \end{array}$$

6 ✓

b) $115 = 01110011$ ✓

$$\begin{array}{r} 115 \\ -64 \\ \hline 51 \\ -32 \\ \hline 19 \\ -16 \\ \hline 3 \end{array}$$

3 ✓

ii)

a) $10011111 = 128 + 16 + 8 + 4 + 2 + 1$

$$= 150 + 7 = 157$$

✓

$$\begin{array}{r} 128 \\ +16 \\ \hline 142 \\ +8 \\ \hline 150 \\ 4+2+1 \\ \hline 7 \\ 150+7=157 \end{array}$$

3 ✓

b) $00100111 = 32 + 4 = 36 + 2 = 38 + 1 = 39$

✓

iii)

a) BA = 10111010

8	4	2	1
B	1	0	1
A	1	0	1
	0	1	0
	1	0	1

b) C3 = 11000011

8	4	2	1
C	1	1	0
3	0	0	1
	0	1	1
	0	1	1

iv) a) 38 = 39

$$3 \times 16 = 28$$

$$B = 11 \times 1 = 11$$

$$28 + 11 = 39$$

b) F6 = 246

$$F = 15 \times 16 = 240$$

$$6 = 6 \times 1 = 6$$

$$240 + 6 = 246$$

v) $2^6 = 64$ different values

$$2^2 = 4$$

$$2^3 = 2 \times 2 \times 2 = 8$$

$$2^4 = 2 \times 2 \times 2 \times 2 = 16$$

$$2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$$

$$2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$$

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

vii)

$$600 \times 400 = 240,000 \text{ pixels} \times 4 = 240,000 \text{ bits}$$

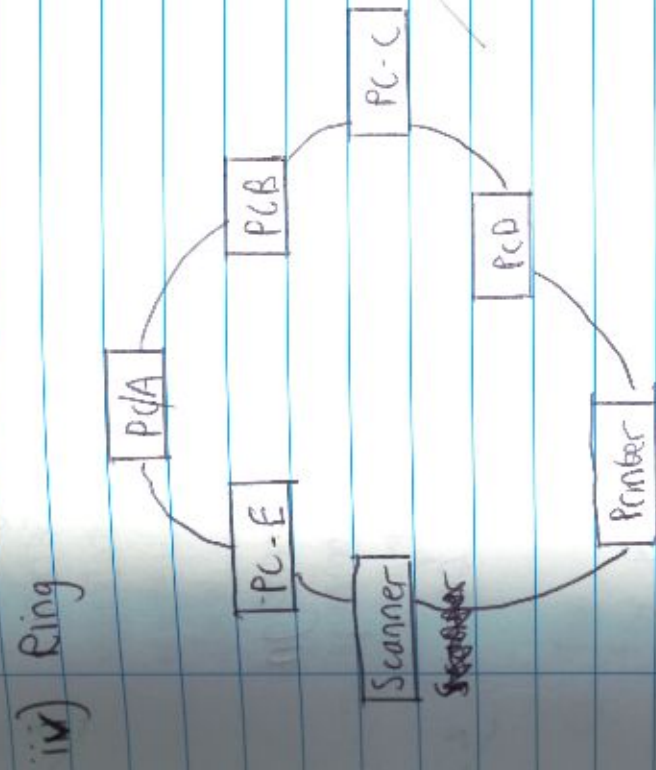
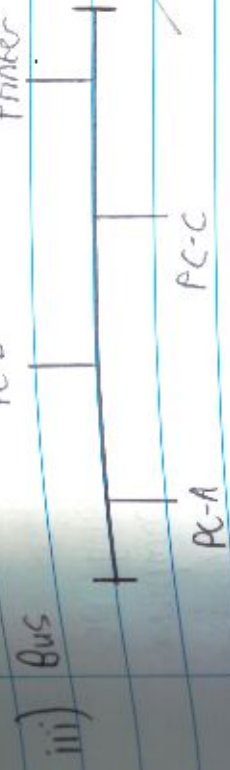
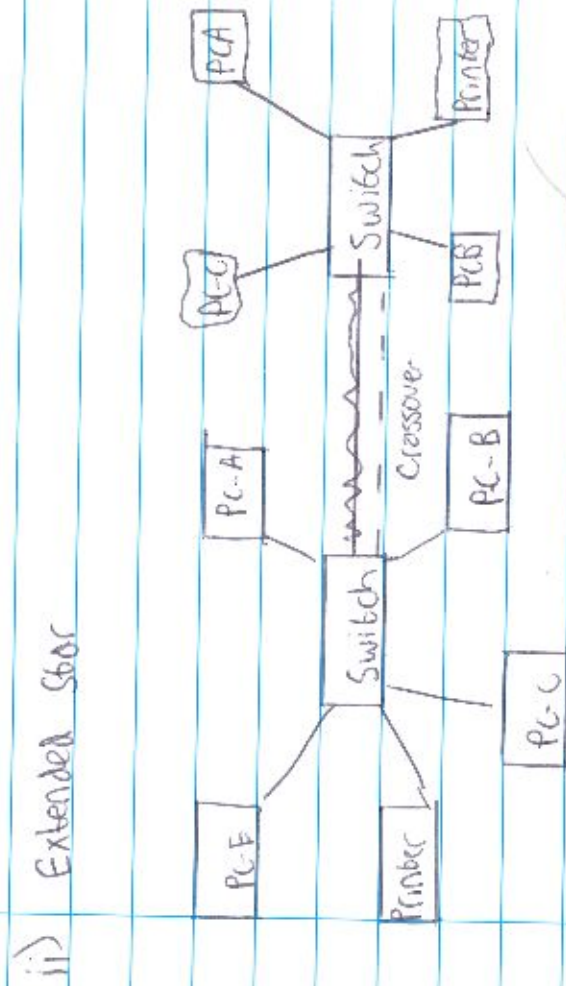
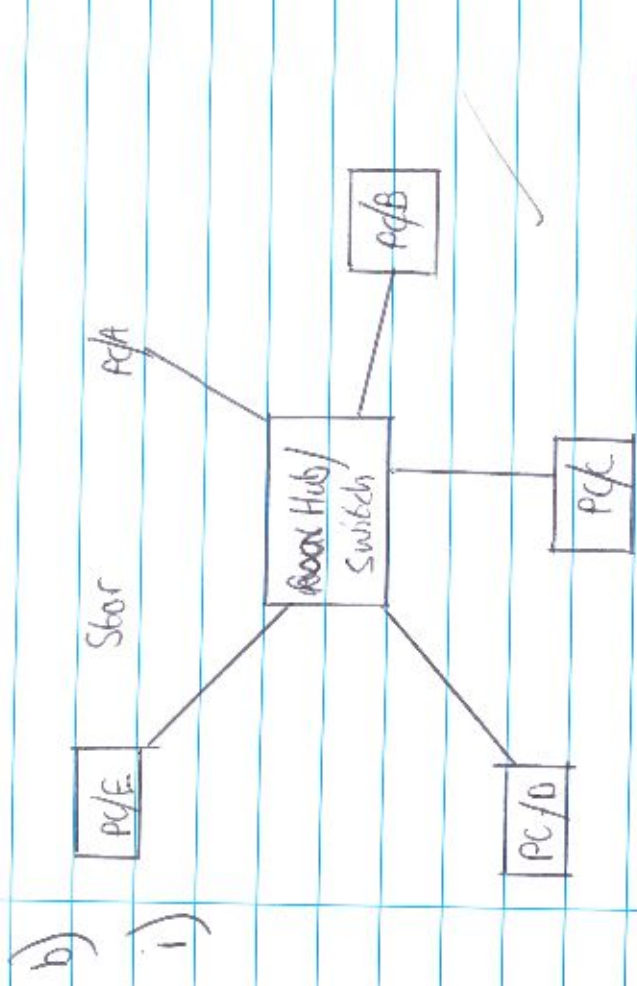
$$240,000 \times 3 = 720,000 \text{ bytes} \times 8 = 5,760,000 \text{ bits}$$

viii) JPG Compression Ratio 10:1. It would reduce the file size by a length.

$$720,000 \div 10 = 72,000$$

If saving in JPG format, the file size reduces.

- Application
 - Presentation
 - Session
 - Transport
 - Network
 - Data Link
 - Physical
- Local Host
- Port Addressing, Segments
 - IP Addressing, Frames
 - MAC Addressing, Packets
 - Media e.g. Cabling



c) Frames - Network layer, IP addressing

Packets - Data link layer, MAC Addressing

Segments - Transport layer, port addressing

d) Simplex - Communication in one direction only
e.g. Broadcast

Half-Duplex - Communication can travel both ways but only one direction at a time

Full-Duplex - Communication both ways so device can send and receive the same time.

03)

a) A suitable CPU for a high end Graphic Design PC would consist of quad core in order to complete multiple tasks. A good speed of minimum 3GHz to 4GHz max would be ideal due to the nature of their work with different software packages. An example could be one of the i5 processors by intel.

b) The recommended amount of RAM for graphic design would be 8GB minimum. This has enough memory to multitask. Any ~~more~~ less would be ~~mean~~ mean that the system would lag or appear to be slow.

c) For graphic design, a large amount of secondary storage would be needed as photographic images can be large in size. A 2TB HDD would be recommended as there is enough storage for all user files. An alternative would be to use an SSD for ^{the OS and} software ~~for~~ which would result in fast load speeds, and use a second drive, internal or external, for user files.

d) A graphic designer would require different peripherals like atleast 4 USB 3.0 ports in order to use input devices like a mouse and keyboard. They would also need a digital camera to capture images on and a graphics table to manipulate images. Basic speakers would be a bonus and would not require any other ports. A new born interface card would also be needed as many graphic designers use portfolios to publish their work. They would also need to output devices like a 4K monitor in order to get the best graphic design and a high quality laser printer to print their designs.

e) The integrated graphics would not be good enough for a high end graphic designed, therefore a graphics card would be needed. A suitable graphics card would consist of HDMI output or displayport, with atleast 2GB of memory. Some graphics cards like the Nvidia GTX1050 would be suitable as it ~~features~~ has the features above. Anything over this would be overkill for a graphic designer and would not be used to its full advantage.

Q4

a) There are three types of backup:

1. Full - These backups consist of all files and folders ~~every day~~ backed up every day. This is the longest method of backing up however is the quickest and easiest to restore.

2. Incremental - This type of backup consists of backing up all modified files since the last incremental backup. This is the ~~simplest~~ ^{quickest} method of backing up as only modified files are backed up. However, when restoring all of the incremental backups ~~under the~~ every day needs to be restored. Full backup will take place at start of period.

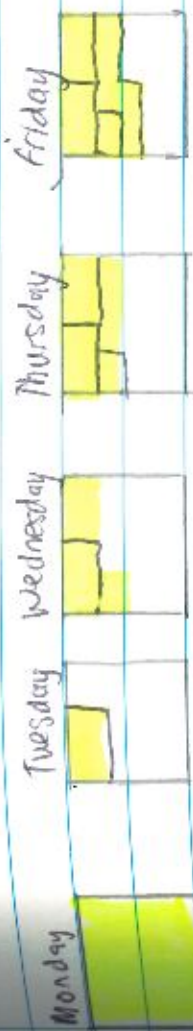
3. Differential - In a differential backup, a full backup will take place at the start of the time period and only the files that have been modified since this full backup will be backed up. When restoring these files, the ~~last~~ latest differential backup and the full backup will be restored.



Full Backup



Incremental



Differential

b)

i) Magnetic Tape

- Small, portable
- Large sizes - 512GB
- Special equipment needed
- Expensive

ii) Optical Media

- Readily available
- Most devices have optical drives
- Small sized, only 7GB on DVD
- CD/DVDs can be cheap

iii) External Hard Drive

- Portable
- Cheap
- Many different sizes - from 8GB to 3TB+
- Most devices support them.

iv) Storage Area Network

- As it is a network is can be shared between devices
- Expensive to set up and maintain.

v) USB Flash Drive

- Small ~~hard~~ easily lost
- Cheap, portable
- ~~Range~~ Commonly range from 8GB to 64GB

- Useful for personal files/backups

- Files can corrupt ~~easy~~ if not ejected correctly.

2

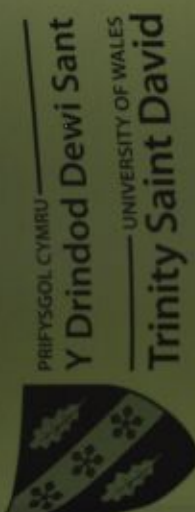
Surname

Howells

(Block Capitals) Forename(s)

ADAM

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Student Number	41180955	List the numbers of the questions you have attempted	Office Use
Title of Examination Paper	Comp Arch + Networking	1	26
Module Code	ACCA1001	2	22
Date and Time of Examination	18/10/2011 5.30pm - 7.00pm	3	10
Examination Venue	deg Sir Gar	4	12
Seat Number			
Number of Answer Books handed in		Total	70

(Gweler yr ochr arall am y rheolau Cymraeg)

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Trinity Saint David

Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

- Rhowch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
- Rhowch eich enw yn y lle a ddarperir i'r dde a seliwch i guddio eich enw.
- Rhaid i'r atebion fod mewn llawysgrifen ddarlledadwy. Gall yr Arholiwr naill ai anwybyddu sgript annarlleneddwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
- Ysgrifennwch eich atebion mewn inc.
- Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
- Ni ddylid rhwngo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
- Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddeinyddio'r lagrau sydd ar gael oddi wrth y gwyliwr/gwyliwyr.
- Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu deinyddio neu heb eu deinyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.

1	Rhif Myfyrwr	Rhestrwch rifau'r cwestiynau a ymgeiswyd genych	At Ddiwedd y Swyddfa
2	Teitl y Papur Arholiad		
3	Cod y Modwl		
4	Dyddiad ac Amser yr Arholiad		
5	Lleoliad yr Arholiad		
6	Rhif Sedd		
7	Nifer y Llyfrau Atebion a gyflwynwyd		Cyfanswm

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw _____ (LLYTHRENNAU BREISION) Enw(au) cyntaf _____

i) $27 - 16 = 11 - 8 = 3$

a) $16 \ 8 \ 4 \ 2 \ 1$
 $1 \ 1 \ 0 \ 1 \ 1$

$= 11011$
 $481 - 32 = 449$

b) $115 - 64 = 51 - 32 = 19 - 16 = 3$

$64 \ 32 \ 16 \ 8 \ 4 \ 2 \ 1$
 $1 \ 1 \ 0 \ 0 \ 1 \ 1$
 $64 \ 51$

$= 1110011$

ii)

a) 10011111
 $8 + 4 + 2 + 1 = 15$
 $128 + 16 = 144$
 $144 + 15 = 159$

b) 00100111

32
 4
 2
 1
 $= 39$

iii)

B₁₀(11) A₁₀(10)
 $8 \ 4 \ 2 \ 1$ $8 \ 4 \ 2 \ 1$
 $1 \ 0 \ 1 \ 1$ $1 \ 0 \ 1 \ 0$

$= 10111010$

b) C3

$$\begin{array}{r} C(12) \\ 8 \mid 4 \mid 2 \mid 1 \\ 1 \mid 1 \mid 0 \mid 0 \end{array} + \begin{array}{r} 3 \\ 8 \mid 4 \mid 2 \mid 1 \\ 0 \mid 0 \mid 1 \mid 1 \end{array}$$

= 11000011 ✓

iv)

a) 3B

$$\begin{array}{r} 3 \\ 8 \mid 4 \mid 2 \mid 1 \\ 0 \mid 0 \mid 1 \mid 1 \end{array} + \begin{array}{r} B(11) \\ 8 \mid 4 \mid 2 \mid 1 \\ 1 \mid 0 \mid 1 \mid 1 \end{array}$$

= 00111011

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

32

16

8 +

2

1
59

1

= 59 ✓

b) F6

$$\begin{array}{r} F(15) \\ 8 \mid 4 \mid 2 \mid 1 \\ 1 \mid 1 \mid 1 \mid 1 \end{array} + \begin{array}{r} 6 \\ 8 \mid 4 \mid 2 \mid 1 \\ 0 \mid 1 \mid 1 \mid 0 \end{array}$$

= 11110110

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

128

64 12

32 16 +

16 20

4

2

246

12

= 246 ✓

$$\begin{array}{r} 32 \mid 16 \mid 8 \mid 4 \mid 2 \mid 1 \\ 1 \mid 1 \mid 1 \mid 1 \mid 1 \mid 1 \end{array}$$

32

16

8 16

4 20 +

2

1
63

2

= 64 different values can be represented in 6 bits. ✓

vi) $8 \times 3 = 24$

~~600~~ $600 \times 400 = 240,000$

~~600~~ ×

~~400~~

~~00~~

240000

$$\begin{array}{r} 24 \\ \times 24 \\ \hline 416 \end{array}$$

$$= 416,000$$

viii) JPG Ratio 1:10

~~10:1~~

$$416,000 \div 10 = 41,600$$

2)

a) Layers of OSI Model:

Application
Presentation
Session
Transport
Network
Data Link
Physical

b)

i) Star



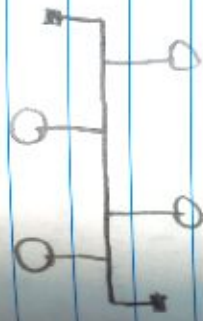
○ = Node (clients)
● = Central node (Server)

A Star involves all other nodes directly connecting to a central node.

iii) Extended Star



iii) Bus involves nodes connecting to a backbone cable, which terminates on each end.



iv) Ring is similar to a star without a central node. Data must flow through one direction.



c) Transport — Segments — Data gets broken down into smaller chunks (TCP)

Network — Packets — Each segment is packeted with information such as destination and source address (IP)

Data Link — Frames — Ethernet

d) Half Duplex is a form of communication where two devices can communicate with each other, but not at the same time. When one device speaks, the other must wait and listen.

Full Duplex is used for two-way communications simultaneously. Both devices can communicate at the same time.

Simplex is used for one-way communication, where one device speaks and the other listens.

3)

a) For high-end graphic design, it's suitable to use a processor that can handle rendering and multi-tasking. Intel's i7 multi-threads, allowing more tasks to be performed at the same time. It can also process data at much faster rates, making it suitable for rendering videos and images.

b) For this PC, 8Gb of RAM will be acceptable in allow for graphic design. However, with more complex graphics and demanding graphics software, 16Gb is recommended.

c) The most suitable non-volatile storage would be an SSD (Solid State drive). While a hard drive would be cheaper for more storage, an SSD can perform at higher speeds, allowing an operating system and high-end graphical software to run smoother and faster. An SSD is also more reliable, with less chance of corruption. 256Gb should be sufficient for an operating system and high-end graphical software.

d) When graphical design is involved, you will need ports to support graphical tools. For devices, it's a good idea to have a printer to view graphics physically. This can be done via a USB port. A USB port can also be used for graphical/drawing tablets, allowing the user to draw digitally. A graphic designer will also need an input system to control the computer generally. This can be done with a keyboard and mouse, both typically making use of USB ports. A high quality monitor is recommended to view graphics in more detail and colour. The port that is typically used for high-end monitors is DisplayPort.

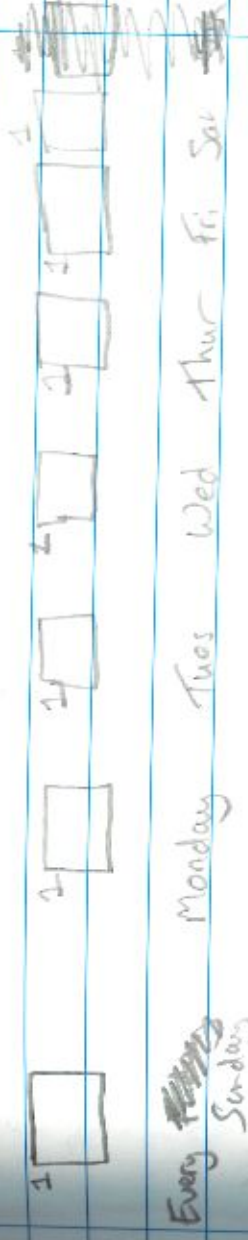
e) When dealing with high-end graphics, a high-end graphics card is needed to process and output a display.

2
An 8Gb graphics card with GDDR5 should suffice, for example an AMD Radeon 390. A graphics card should also have a DisplayPort if a high-end monitor is used.

4)

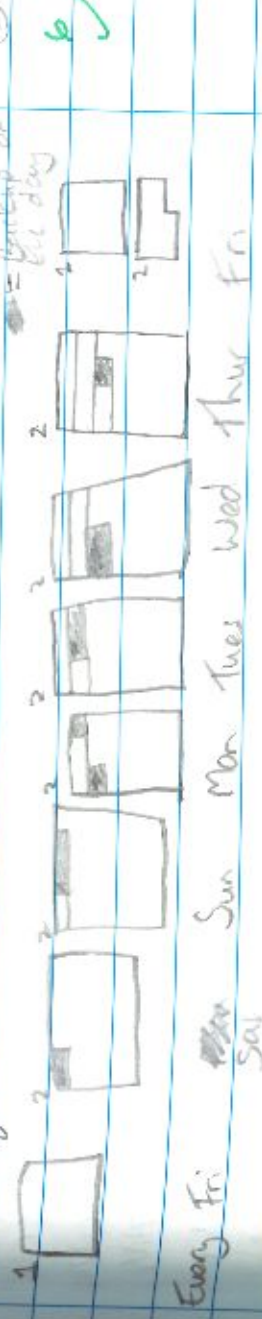
a) Full

A full backup is used to backup all data on every day. This gives you a complete backup that can be restored to the most recent day.



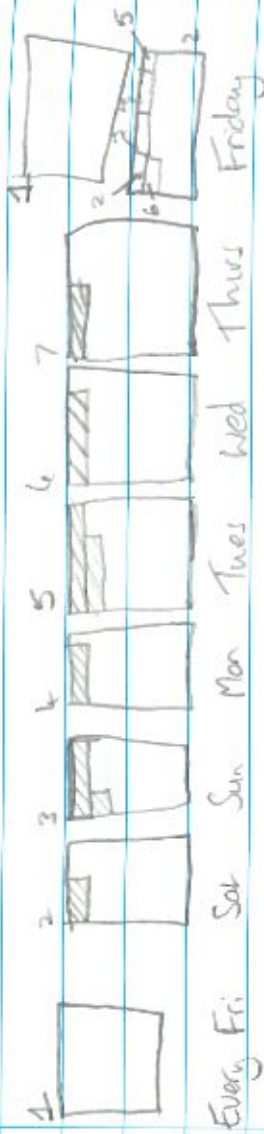
Differential

A differential backup is when a full backup is performed on one day, then the following days backup what has been changed from the full backup. For restoration the previous full backup is restored and the backup of all changes is then restored.



Incremental

An incremental backup is similar to differential, except instead of having one backup for the changes throughout the week, each day holds a copy of its own changes on that day. If ~~restoration~~ full restoration is needed, the last full backup must be restored, then the following backups of the changes for each day.



b)

- i) Magnetic tape is commonly used for backups, thanks to its low costs and easy storage. However, if you want to go to a location for data, the tape must be reeled until it reaches there. Not suitable to use as a secondary storage. ✓
- ii) Optical media are small and easy to transport, however a laser disk reader/writer is required. Optical media also has a size cap, which is less than 106 for CD-Roms. ✓
- iii) External hard drives are useful for storing a large amount of data. They can also be partitioned to split the disks up for an operating system. However, any dust particles and hair, if it gets under the head, can be catastrophic. Externally, they can be easy to transport. ✓
- iv) SANs allow anyone to access data via the network which excludes hardware except for the server. For example, SANs can be good for students as they can have their own area on the network and are able to access from home via the internet. However, SANs can be a target for hackers where data can be stolen, lost or leaked. This means SANs are less secure. ✓
- v) USB flash drives are great for transporting or they are very small. They utilize USB. ✓

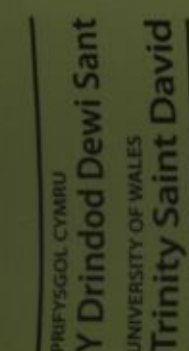
Surname

LAYTON

(Block Capitals) Forename(s)

MORGAN

Please complete this section and SEAL before the examination starts.

PRIFYSGOL CYMRU
Y Drindod Dewi Sant

UNIVERSITY OF WALES

Trinity Saint David

Examination Answer Book

12 Pages

Instructions to candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right and seal 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	159041	Office Use	
2	Title of Examination Paper	Computer Architecture and Networking	1	26
3	Module Code	ACCA4001	2	20
4	Date and Time of Examination	17/01/2013 5:30-7	3	14
5	Examination Venue	G45	4	14
6	Seat Number			
7	Number of Answer Books handed in		Total	74

(Gweler yr ochr arall am y fferion Cymraeg)

PRIFYSGOL CYMRU
Y Drindod Dewi Sant
UNIVERSITY OF WALES
Trinity Saint David

Llyfr Atebion Arholiadau

12 Tudalen

Cyfarwyddiadau i Ymgeiswyr

1. Rhwng yr holl wybodaeth y gofynnir andani yn y blychau isod.
2. Rhwng eich enw yn y lle a ddarperir i'r dde a seliwrch i guddio eich enw.
3. Rhaid i'r atebion fod mewn llawysgrifen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgript annarllennadwy, neu drefnu iddi gael ei thcipio a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras notiadau yn y llyfr atebion a thynnu llinell drwyddynl.
6. Ni ddylid rhwng unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwyllwyt.
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.

1	Rhif Myfyriwr		Rheswch rifau'r cwestiynau a ymgeisiwyd gennych	At Dalbentio y Swyddfa
2	Tcilt y Papur Arholiad			
3	Cod y Modwl			
4	Dyddiad ac Amser yr Arholiad			
5	Lleoliad yr Arholiad			
6	Rhif Secl			
7	Nifer y Llyfrau Atebion a gyflwynwyd			Cyfanswm

(See the other side for English version)

A wnewch chi lenwi'r rhan hon a'i SELIO cyn i'r arholiad ddechrau.

Cyfenw

(LLYTHRENNAU BREISION) Enw(au) cyntaf

Q1

$$\begin{array}{r} \text{ii) a) } 27 \\ \begin{array}{|c|c|c|c|c|c|} \hline 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ \hline 0 & 0 & 0 & 1 & 1 & 0 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$a = 00011011$$

$$\begin{array}{r} \text{b) } 115 \\ \begin{array}{|c|c|c|c|c|c|} \hline 51 & 19 & 3 \\ \hline 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ \hline 0 & 1 & 1 & 1 & 0 & 0 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$b = 01110011$$

$$\begin{array}{r} \text{ii) a) } 10011111 \\ \begin{array}{|c|c|c|c|c|c|} \hline 15 \\ \hline 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ \hline 1 & 0 & 0 & 1 & 1 & 1 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$a = 159$$

$$\begin{array}{r} \text{b) } 00100111 \\ \begin{array}{|c|c|c|c|c|c|} \hline 32 & 16 & 8 & 4 & 2 & 1 \\ \hline 0 & 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ + 7 \\ \hline b = 39 \end{array}$$

$$\begin{array}{r} \text{iii) a) } 38 \\ \begin{array}{|c|c|c|c|c|c|} \hline 8 & 4 & 2 & 1 \\ \hline 0 & 0 & 1 & 1 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$a = 00111011$$

$$\begin{array}{r} \text{a) } BA \\ \begin{array}{|c|c|c|c|c|c|} \hline 8 & 4 & 2 & 1 \\ \hline 1 & 0 & 1 & 1 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$a = 10111010$$

$$\begin{array}{r} \text{b) } C3 \\ \begin{array}{|c|c|c|c|c|c|} \hline 8 & 4 & 2 & 1 \\ \hline 1 & 1 & 0 & 0 & 1 & 1 \\ \hline \end{array} \\ \hline \end{array}$$

$$B = 11000011$$

10 A
11 B
12 C
13 D
14 E
15 F

iv) a) 3B

8	4	2	1
0	0	1	1
1	0	1	1

128 ⁷	64 ⁶	32 ⁵	16 ⁴	8 ³	4 ²	2 ¹
0	0	1	1	1	0	1

32⁶⁺¹⁺¹⁺¹

16⁴

8³

2

$$+ \frac{1}{= 59}$$

$$a = 59$$

b) F6

8	4	2	1
1	1	1	1
0	1	1	0

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

$$+ \frac{128^{2+2+2+2+2+2+2+2}}{= 246}$$

$$b = 246$$

V) 2n-1

64-1

$$2^{2n-1} = 2^{64-1} = 2^{63}$$

vii) $600 \times 400 = 240,000$

$\times 3$

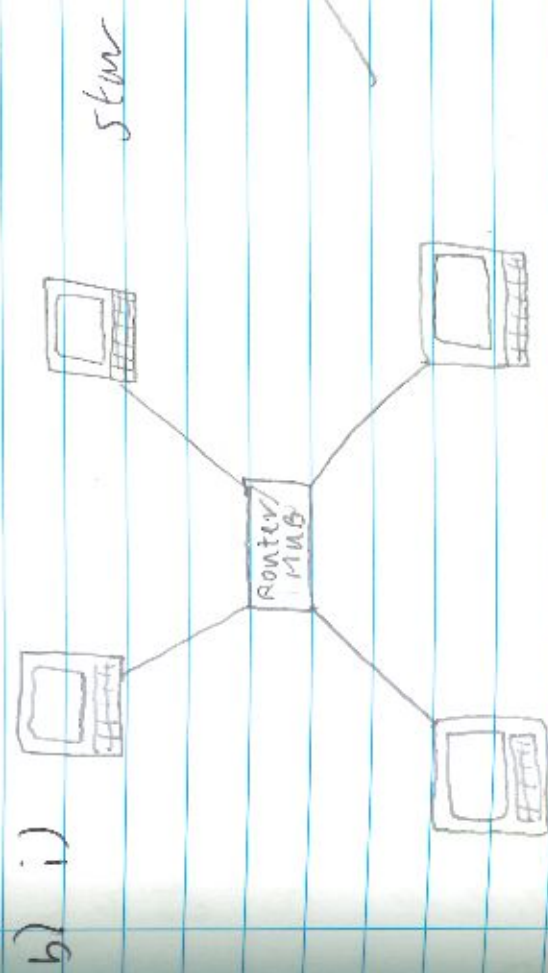
$$= 720,000$$

$$= 720 \text{ KB}$$

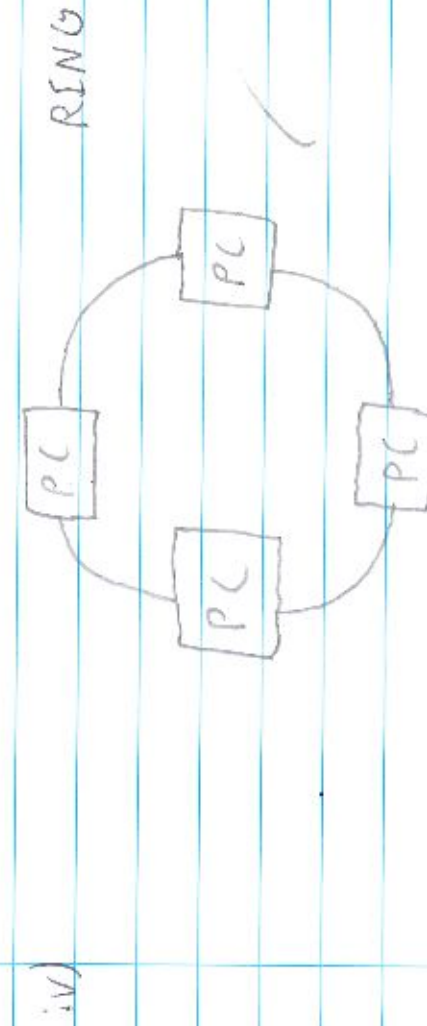
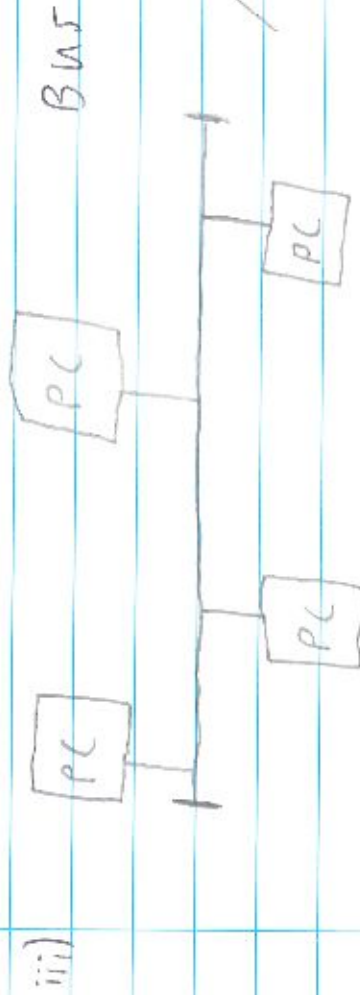
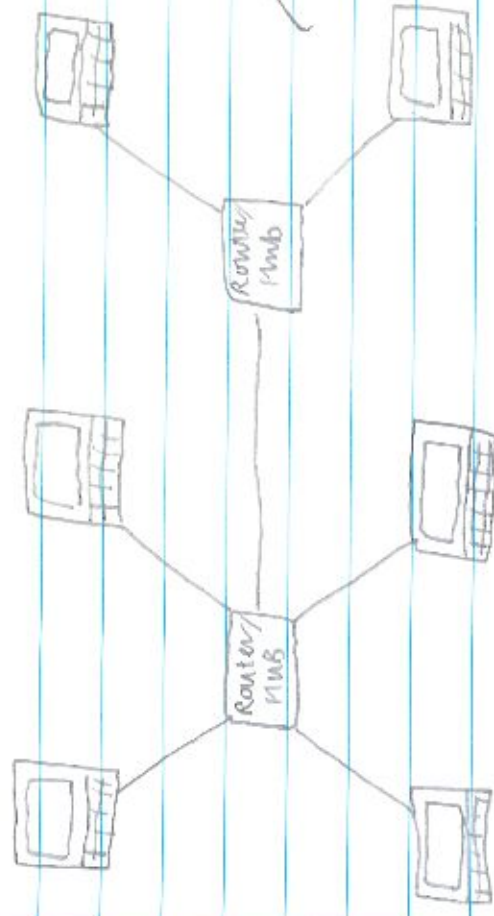
viii) 10:1 72 Kb

Q2

a) APPLICATION
PRESENTATION
SESSION
TRANSPORT
NETWORK
DATA LINK
PHYSICAL



ii) Extended Star



- C) FRAMES = DATA LINK + MAC
 PACKETS = NETWORK + IP
 SEGMENTS = TRANSPORT + TCP

D) Half Duplex means data can only flow one way through a transmission medium.

Full Duplex means that data can travel bi-directionally meaning data can travel both ways.

Simplex means data can travel both ways but not at the same time.

Q3

a) A suitable CPU for a high-end graphic design PC would be an Intel i7 processor. I would choose the i7 as it has a larger cache memory than the i5. It also has 6-8 cores with a minimum of 8 threads meaning it can process data more quickly and efficiently than the i5.

b) A sensible amount of RAM for a high-end graphic design PC would be 16GB. This is a large amount of RAM but will be utilised by RAM heavy graphic design programmes that ~~are already~~ require large amounts of primary volatile storage when they are running.

C) Graphics design projects are often very large in terms of storage so a 2TB western digital HDD would be essential. An SSD card of 250GB of storage would also be utilized to store the operating system and offer a degree of backup storage should the HDD become corrupted. The operating system would be stored here due the SSD works memory being much quicker to access than the HDD as it uses circuitry rather than magnets to store data. It might also be worth considering 500GB of cloud storage so data can be accessed easily from other PCs and act as a backup to the HDD.*

D) The mouse and keyboard would be input devices on this PC as well as an electronic drawing pad so the user can easily input his or her own art work or designs onto the PC. An output device for this PC would be the screen which in this instance I would suggest of being a high quality 4K monitor by Samsung for example. Several USB flash drives and CD/DVD ROM reader would be needed so the user can easily upload or download data or install a design programme or upload photo images.

E) A GTX 8GB graphics card with around 3mb of cache memory would be essential as obviously this PC is going to be graphics heavy so having a specialised processor and with help prevent the CPU getting bogged down with process requests and improve the image clock rate.

C)* Another benefit of the i7 is the 3.5-4 GHz speed which is superior to that of the i3.

Q4

a) Differential backups are where a full backup is undertaken and then the changes that occur after that point are used stored until the next full backup. This means backing up is quicker than a ~~normal~~ ^{normal} backup but a full backup is slower as you must update the changes as well as the full backup.

SUN MON TUE WED THUR FRI SAT SUN

Full backup

changes changes changes changes

Full backup

Incremental back ups are very similar to differential. However they only backup the changes made on that day rather than the total changes. This means you end up with incremental back ups of the changes which must all be restored individually should a restoration be required which is slower again than differential and much slower than a normal backup. However it is the quickest method of restoring back up.



A normal back up is where you do just back up the entire system everyday. This is the slowest to back up but it is the quickest when restoring the system as you have a full up to date back up always available.



b) i) magnetic TAPE is cheap and has low energy consumption but can be easily corrupted if kept in wrong conditions. 2 ✓

ii) optical media has a relatively high storage capacity but can be easily broken. 1 ✓

iii) External hard drives are good as they enable fast access to data. However they can corrupt data to become corrupted relatively easily. *

iv) A Storage Area Network is good as it enables ease of access to a large amount of data however security is an issue. 1 ✓

v) USD Flash drives are good as they are robust and easily portable. However they are relatively limited on how much data they can store compared to the other options. 2 ✓

i) * magnetic tape who requires special software to be read.

iii) * External hard drives can be accessed directly by the operating system and do not require intermediary software.