

Complete, fold and seal
(see note 2 below)

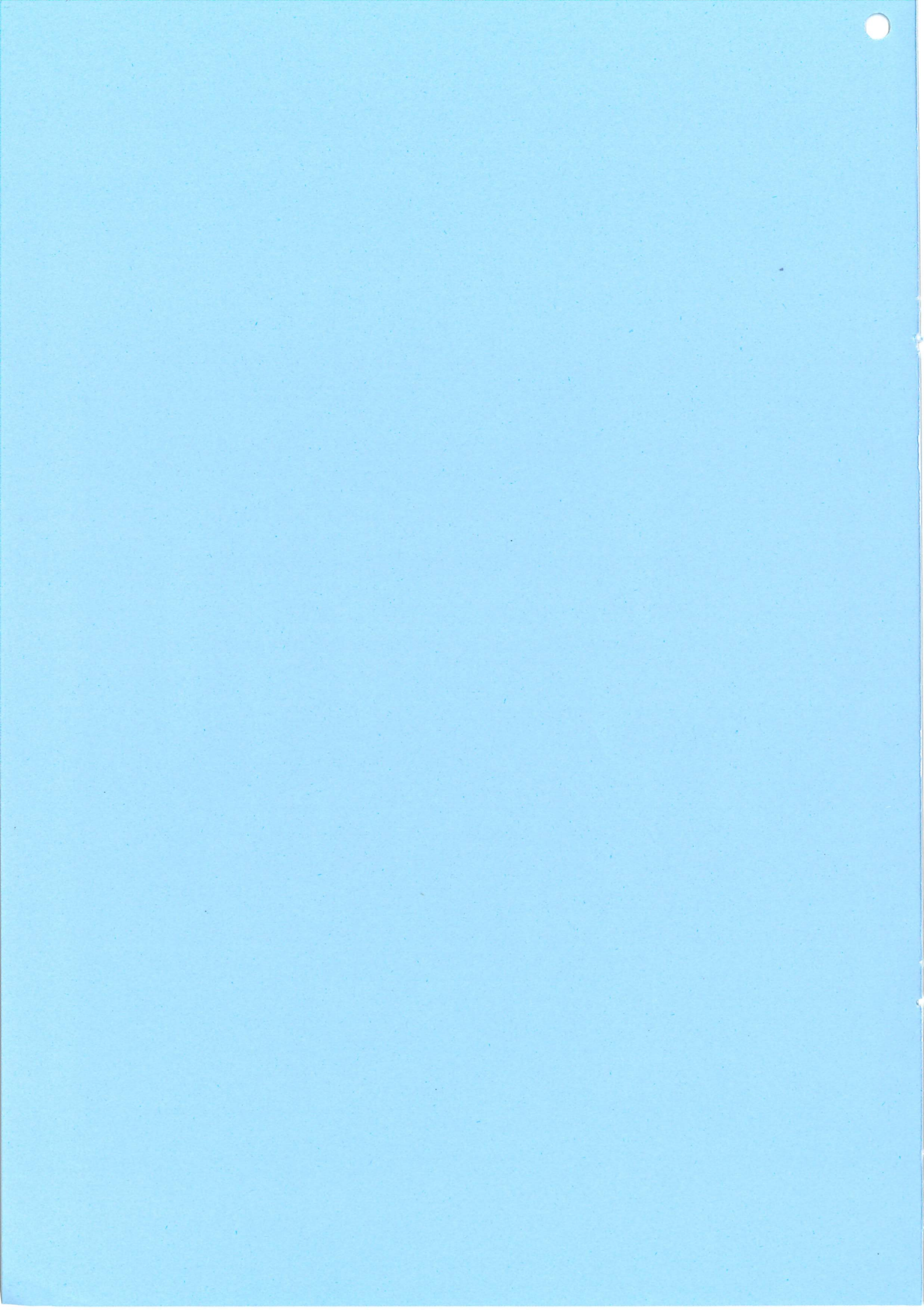
SURNAME: Davies

FORENAME(S): Jack William

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over 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	181842
2	Title of Examination Paper	Computer Architecture ure and Operating systems
3	Module Code	ACCA4022
4	Date and Time of Examination	12/5/26 9:30-11:30
5	Examination Venue	Pembrokeshire College
6	Seat Number	Row 4 Seat 2
7	Number of Answer Books handed in	

List the numbers of the questions you have attempted	Office Use
1	28
2	6
3	7
4	9
Total	50



Question One (35m)

Question No.

a)

1) 62

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

answer = 0111110

2) 125

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

answer = 1111101

b)

1) 10011001

answer = 153

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

2) 11110

answer = 20

16	8	4	2	1
1	1	1	1	0

c)

1) 2F

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

answer =

2) 36

answer =

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

Workings

32

16

8

4

2

62

2

64

32

16

8

4

1

125

8

3

3

3

1

A = 10

B = 11

C = 12

D = 13

E = 14

F = 15

2

2

Question One

5
2
3

d)

1) C3

answer = 195 ✓

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

A=10

B=11

C=12

D=13

E=14

F=15

3

2) 66

answer = 102 ✓

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

64	128
32	64
4	2
2	1
102	195

3

e)

$$16 + 8 + 4 + 2 + 1 = 31 \checkmark$$

answer = 31x

16	8	4	2	1
0	0	0	0	1
0	0	0	1	0
0	0	0	1	1
0	0	1	0	0
0	0	1	0	1
0	0	1	1	0

64
32
16
8
4
2
1

1

f)

$$4000 \times 3000 = 12,000,000 \checkmark$$

$$12,000,000 \times 3 = 36,000,000$$

$$36,000,000 \div 16,000,000$$

4000	3000
3	2
0	0
0	0
0	0
0	0
0	0
0	0

i) = 2.2 Mega Pixels x

ii) 3.6MB ✓

3

Question One

6a

g)

36MB

36

36

36

36

36

36

36

36

288

4

80MB/s

36MB

$$36 \times 1000 \times 1000 = 36,000,000 \checkmark$$

$$36,000,000 \times 8 = 288,000,000 \checkmark$$

36
8 2 4
4 8

288

80MB/s

$$80 \times 1000 \times 1000 = 80,000,000 \checkmark$$

$$288,000,000 \div 80,000,000 \checkmark$$

80

80

160

80

220

40

$$288 \text{ answer} = 3.1 \text{ seconds}$$

~~780~~
~~100~~

28

Question Two

The CPU processes any instructions
The memory is used as temporary storage

CPU

The CPU, Core processing Unit, processes any instructions sent through the computer, whether that be by Input or output instructions or Background instructions being performed by the computer. The main cycle of the CPU is as follows: ✓

1

1. receive
2. decode
3. execute

Memory

The memory, RAM (Random Access Memory), is a form is the computer's main form of temporary storage. It is used to aid the computer in running multiple programs at once, the more RAM you have the more programs you can run at once. RAM is volatile and needs constant power, if a powercut was to happen, everything stored on the RAM at the time will be lost. Once a piece of data is saved it will transfer it into your computer's local hard drive from the RAM. ✓

2

Input and Output

These are the instructions being sent in and out of the computer, whether that is through hardware or software. Input's and Output's allow the user to communicate with their device. ✓

1

Control bus

The control bus essentially controls the flow of data that is going from one component to the next. ~~For example, it allows an input~~ ✓ 1

~~Memory bus~~Address bus

This acts as a destination setter for data passing through it. This is so data ends up in the correct place. ✓ 1

Data bus

Once data is created it will be sent here to be processed. Without the data being processed they won't know what to do with it. X

1. A key is pressed and text is written in, the input/output box sends it to the data bus to be processed. X
2. Once processed the data must then

(6)

Question No.

Examiner Only

Arholwr yn unig

Rhif y Cwestiwn

a)

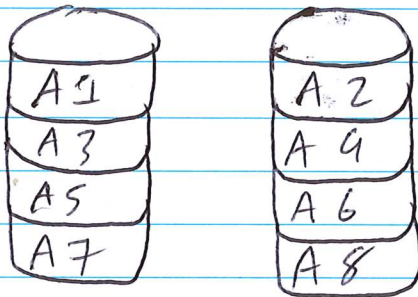
- i) 4GB X
- ii) 500GB X
- iii) 2-4TB X

b)

- i) ~~200-400 Mbps~~ 400-600 Mbps X
- ii) ~~480 Mbps~~ X
- iii) ~~46 kbps~~ X

c)

i) RAID-0



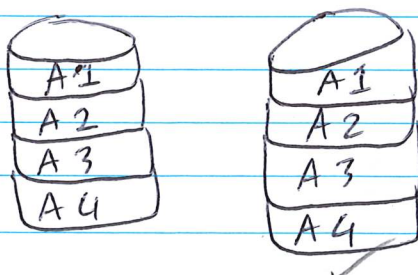
Pros:

- Quicker writing times ✓
- Fastest data processing ✓ same

Cons:

- No data redundancy X
- If one drive fails the other is of no use. ✓

ii) RAID-1



Pros:

- Data redundancy ✓
- If one drive fails install new one and copy data over. ✓

Cons:

- Slower writing times
- ~~If both fail~~
- Catastrophic loss of data is not prevented ✓

Question Four

a) I would go for an i9 processor as they support all high definition editing software ✓
 Price - ~~£1000~~ ~~£1200~~ ~~£1400~~ ~~£1600~~ ~~£1800~~ £200-400

b) I would recommend going for 16GB of RAM, or two 8GB RAM sticks. This is because when working with video editing software and video editing projects, you may have multiple editing softwares open and also large files containing videos and clips.
 Price - £20-40

c) ~~A 4TB~~ ~~hard disk~~ ~~drive~~ A 4TB hard disk drive will be enough, most projects probably won't exceed a file size of 800MB.
 Price - ~~£1000~~ ~~£1200~~ ~~£1400~~ £200

d) ~~A mouse and keyboard will be needed,~~

Input devices:

- Mouse - ~~£100~~ £20
- Keyboard - £60
- USB drive - £80

Output devices:

- High quality 4k Monitor - £400
- Speakers / Headphones - £80-100
- Printer - £120-200

Ports Required:

- Min 5-6 USB 3 ✓
- Headphone / speaker
- HDMI for monitor ✓
- At least 1-2 lightning ports for quicker input ~~transfer~~ transfer time ✓

Question No.

Examiner Only

Arholwr yn unig

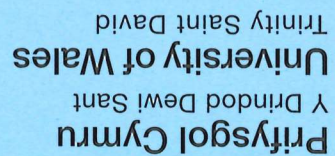
Rhif y Cwestiwn

Question No.

Examiner Only

Arholwr yn unig

Rhif y Cwestiwn



12 Tudalen

1. Rhwch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn y lle a ddarparwyd ar y dde, plygwch ef a'i selio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

CYFENN:

Llenwch, plygwrch a seliwrch
(gweler nodyn 2 isod)

- Rhaid i'r atebion fod mewn llawysgriften ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgrïpt annarllenadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
- Ysgrifennwch eich atebion mewn inc.
- 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 gwyllwyr/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.

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	Teitl y Papur Arholiad	
1	Rhif Myfyrwr	

[illegible]

(See the other side for English version)