



12 Pages

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	2220768
2	Title of Examination Paper	Computer Architecture
3	Module Code	ACCA4022
4	Date and Time of Examination	22 Nov, 2023 10:00
5	Examination Venue	QP
6	Seat Number	D6
7	Number of Answer Books handed in	

(Gweler yr ochr arall am y fersiwn Cymraeg)

[illegible]

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(see

SUR

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Prifysgol Cymru
Y Prifod 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 ddarparwyd ar y dde, (pwygch e'f a'i seilio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

1. Rhaid i'r atebion fod mewn llawysgriflen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgript annarllenadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
2. Ysgrifennwch eich atebion mewn inc.
3. Dechreuwch bob ateb ar dudalen newydd. Gwneuch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
4. Ni ddylid rhwygo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
5. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwyr/gwylywyr.
6. 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 amgylchriad.

[illegible]

(See the other side for English version)

Llenwch, plygwch a seliwch
(gweler nodyn 2 isod)

CYFENN:

ENW(AU) CYNTAF:

$$1a (769)_{10} ()_2$$

$$(011101101001)_2$$

$$b (9A2)_{16} ()_2$$

$$(100110100010)_2$$

$$ii (87)_{10} ()_8$$

$$\begin{array}{r|l} 87 & 8 \\ \hline 10 & 8 \end{array}$$

$$\begin{array}{r|l} 87 & 8 \\ \hline 10 & 8 \\ 7 & 8 \\ 2 & 8 \\ 1 & 8 \end{array}$$

$$(127)_8$$

$$\begin{array}{r} 0.875 \\ \times 8 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 0.25 \\ \times 8 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 0.125 \\ \times 8 \\ \hline 1 \end{array}$$

$$iii (11101010001)_2$$

$$2 \times 1^0 = 0$$

$$2 \times 0^1 = 0$$

$$2 \times 1^3 = 8$$

$$2 \times 1^5 = 32$$

$$2 \times 1^7 = 128$$

$$2 \times 1^8 = 256$$

$$2 \times 1^9 = 512$$

$$18 + 16 + 14 + 10 + 6 = 64$$

$$(b) (50E)_{16}$$

$$16 \times 14^0 = 16$$

$$16 \times 0^1 = 0$$

$$16 \times 5^2 = 400$$

$$224 + 16 + 400 = 640$$

iva (4278)₁₀

	4278	16
6	267	16
11	16	16
0	1	16
1	0	16

$$\begin{array}{r} 0.375 \\ \times 16 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 0.6875 \\ \times 16 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 0.0625 \\ \times 16 \\ \hline 1 \end{array}$$

(10B6)₁₆

b (670)₈ (16)

(0110 0111 0000)₁₆

$$16 \times 1^4 = 64$$

$$16 \times 1^5 = 80$$

$$16 \times 1^6 = 96$$

$$16 \times 1^4 = 144$$

$$16 \times 1^0 = 160$$

$$160 + 144 + 96 + 80 + 64 = 544$$

1 RAM - B ✓

2 Ethernet Port - C ✗

3 Microphone - C ✓

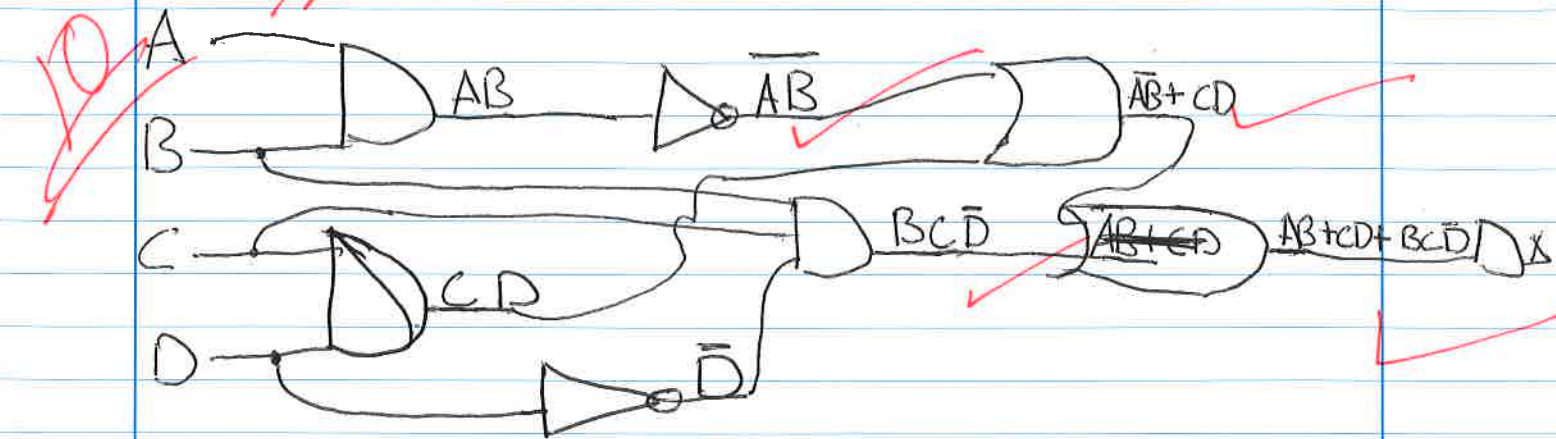
4 Flash Drive - C ✗

5 Gamepad - D ✗

Q. 3

$$\frac{50000}{2 \times 2 \times 2.5 \text{ GHz}} = \frac{50000 \times 10^9}{4} = 50 \times 10^6$$

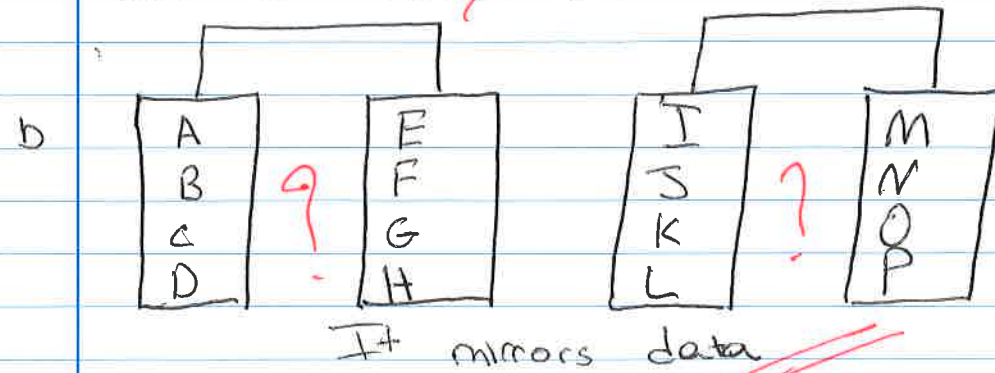
Q. 4



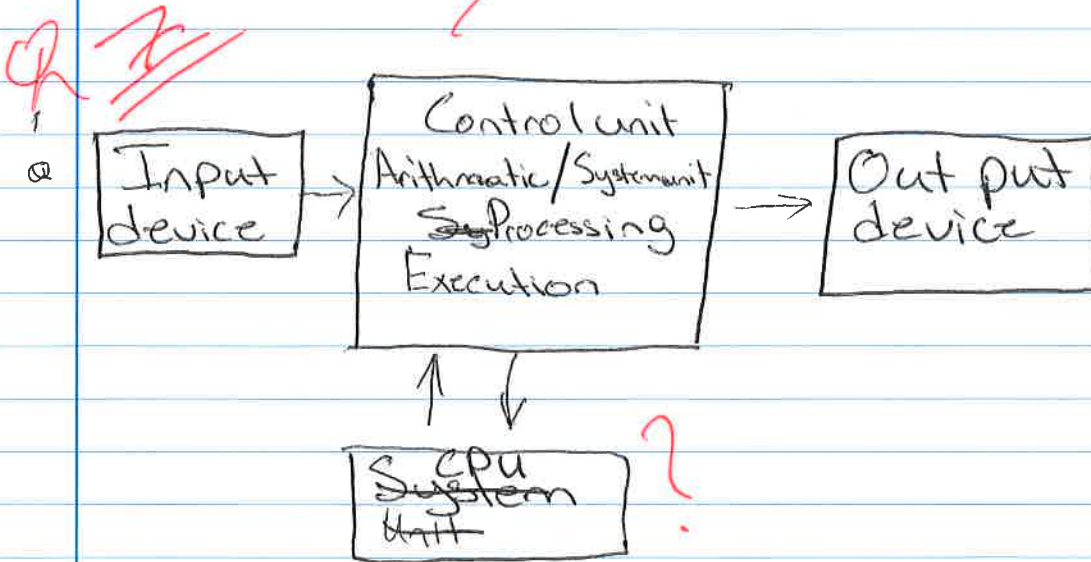
Truth Table for Q. 4:

A	B	C	D	AB	$\bar{A}\bar{B}$	CD	$\bar{C}\bar{D}$	$\bar{A}\bar{B} + CD$	$\bar{A}\bar{B} \cdot \bar{C}\bar{D}$	Final Output
0	0	0	0	0	1	0	1	0	1	0
0	0	0	1	0	1	0	0	0	0	0
0	0	1	0	0	1	0	1	0	0	0
0	0	1	1	0	1	1	0	1	0	0
0	1	0	0	0	1	0	1	0	0	0
0	1	0	1	0	1	0	0	0	0	0
0	1	1	0	0	1	0	1	0	0	0
0	1	1	1	0	1	1	0	1	0	0
1	0	0	0	0	1	0	1	0	0	0
1	0	0	1	0	1	0	0	0	0	0
1	0	1	0	0	1	0	1	0	0	0
1	0	1	1	0	1	1	0	1	0	0
1	1	0	0	1	0	0	1	1	0	1
1	1	0	1	1	0	0	0	1	0	1
1	1	1	0	1	0	0	1	1	0	1
1	1	1	1	1	0	1	0	1	0	1

- Q5
- a Two characteristics of RAID is that it stores memory in the form of cache and



- c One advantage of RAID 1 is it can store a lot more data and one disadvantage is that it is much easier to lose data



- b 2 advantages of Von Neumann architecture is that it is easier to produce and it is less expensive

- c 2 disadvantages of Von Neuman architecture is that it is less powerful