

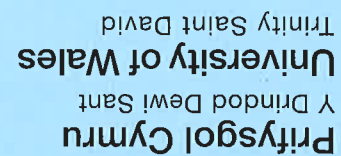


12 Pages

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 elect to charge 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 room.**

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)



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, plynwch et a'i selio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

Лленвч, плгвч а селвч
(гвелер нodyn 2 isod)

3. Rhaid i'r atebion fod mewn llawysgriften ddarllenadwy. Gall yr Arholiwr naill ai anwybyddu sgript 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 thynnwch 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 gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwyliwr.
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 awgylchïadau.

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

(See the other side for English version)

[illegible]

Question One

i. (a) $(769)_{10}$

R	769	$\div 2$	Answer
1	384		$(1100000001)_2$
0	192		
0	96		
0	48		
0	24		
0	12		
0	6		
0	3		
1	1		
1	0		

(b) $(9A2)_{16}$
 $\begin{array}{ccc} 1 & 1 & 1 \\ 1001 & 1010 & 0010 \end{array}$

Answer
 $(100110100010)_2$

ii.

(a) $(87)_{10}$

R	87	$\div 8$	Answer
7	10		$(127)_8$
2	1		
1	0		

(b) $(5D9)_{16}$

$\begin{array}{ccc} 1 & 1 & 1 \\ 0101 & 1101 & 1001 \end{array} \begin{array}{ccc} 010 & 111 & 011 & 001 \\ 2 & 7 & 3 & 1 \end{array}$

Answer
 $(2731)_8$

iii. (a)

$\begin{array}{cccccccccccc} 10 & 9 & 8 & 7 & 6 & 5 & 4 & 3 & 2 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 & 1 & 0 & 1 & 0 & 0 & 1 \end{array}_2$

$$1 \times 2^9 + 1 \times 2^8 + 1 \times 2^7 + 1 \times 2^5 + 1 \times 2^3 + 1 \times 2^0$$

$$512 + 256 + 128 + 32 + 8 + 1 = (938)_{10}$$

Answer

iii. ⑥ $(5^2 0^1 E^0)_{16} \rightarrow (1294)_{10}$

$$5 \times 16^2 + 0 \times 16^1 + 14 \times 16^0$$

$$1280 + 0 + 14 = (1294)_{10}$$

iv. ⑦ $(1/4/2/78)_{10}$

$$10/100/60/10/100/100/100/100$$

⑧ $(1/6/7/0)_{10} \rightarrow (1/1/1/0)_{10}$

⑨

R	4	2	7	8	$\div 16$
6	2	6	7		16.6875
B		1	6		0.0625
0			1		
1			0		

$$(4278)_{10} \rightarrow (10B6)_{16}$$

⑩ $(670)_8 \rightarrow (11011000)_2$

Question Two

or. KPIs

1. RAM - Memory (b) ✓
2. Ethernet Port - Input device (c) ✗
3. Microphone - ~~Out~~ Input device (c) ✓
4. Flash Drive - Storage Device (F) ✓
5. Gamepad - Output device (d) ✗

Question Three

$$\frac{50000}{2 \times 2.5 \times 10^9} \text{ sec.}$$

$$\frac{50000}{5} \times 10^{-9} \text{ sec.}$$

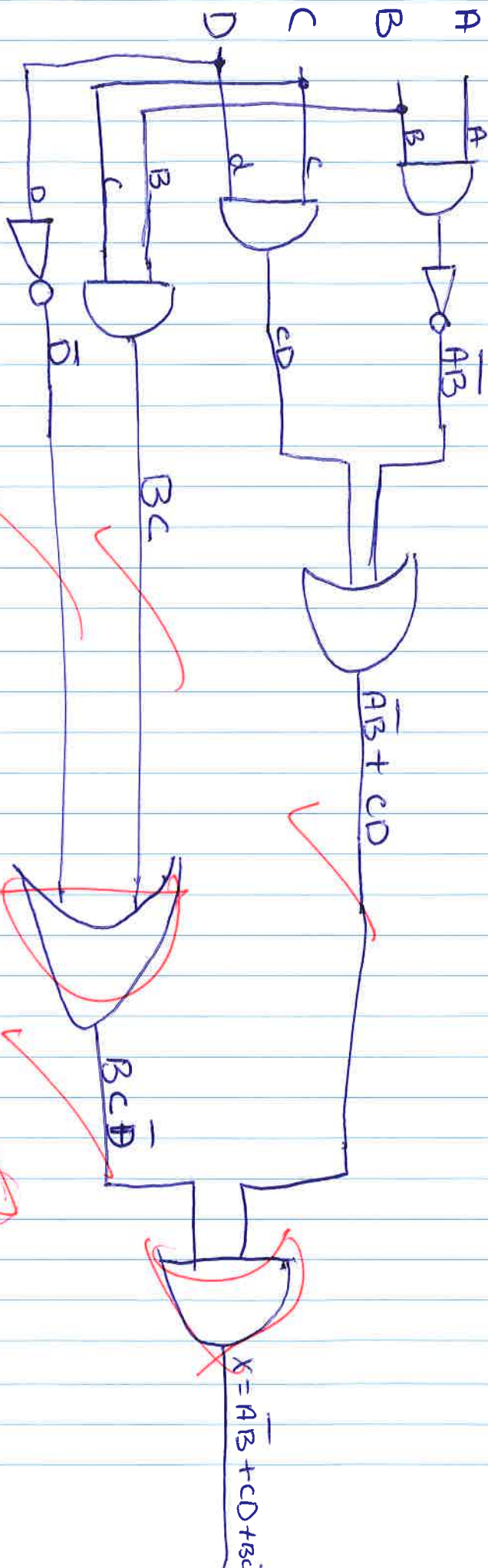
$$\frac{10000 \times 10^{-9}}{10} \text{ sec.}$$

$$10 \times 10^{-6} \text{ sec}$$

$$\underline{\underline{10 \text{ MS}}}$$

✓

Question Four



~~✓~~

$X = \overline{A}B + CD + BC\overline{D}$

~~✓~~

Question Five

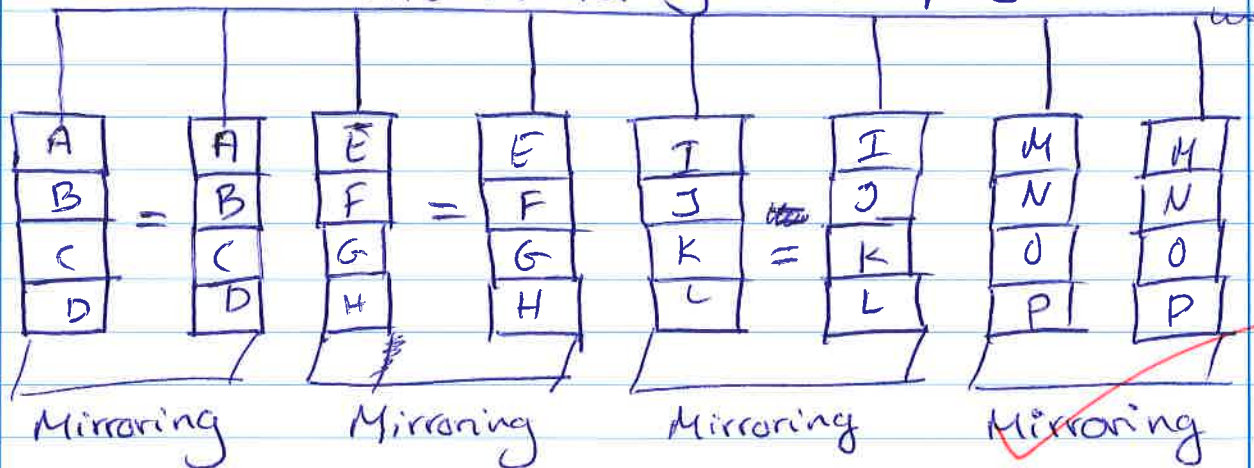
① "Redundant Array", ~~Think RATA~~ ~~zero~~

Redundancy, which means it works with more speed and efficiency.

② cost effective, expensive to manufacture.

there is

The Mirroring Technique



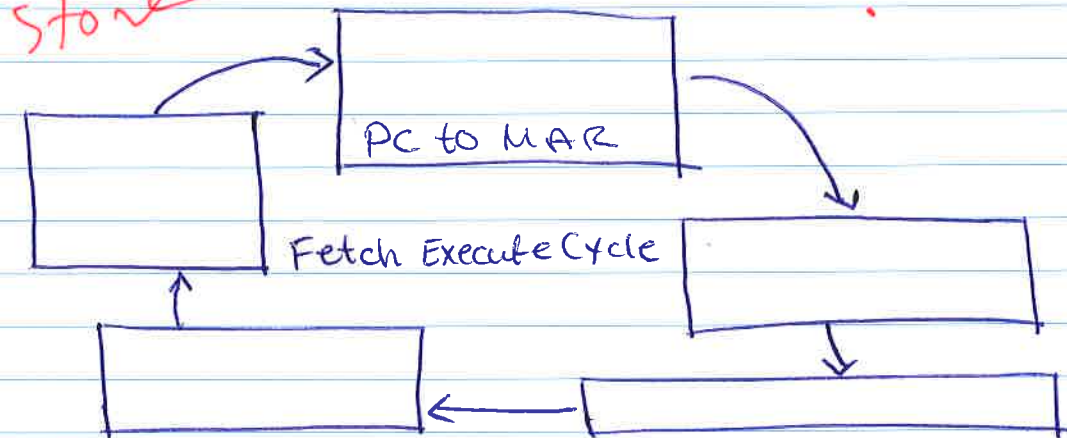
④ complexity and efficiency

- chance of any lost data to be retrieved.

Question Six

1. Fetch step
2. Decode step
3. Execute cycle

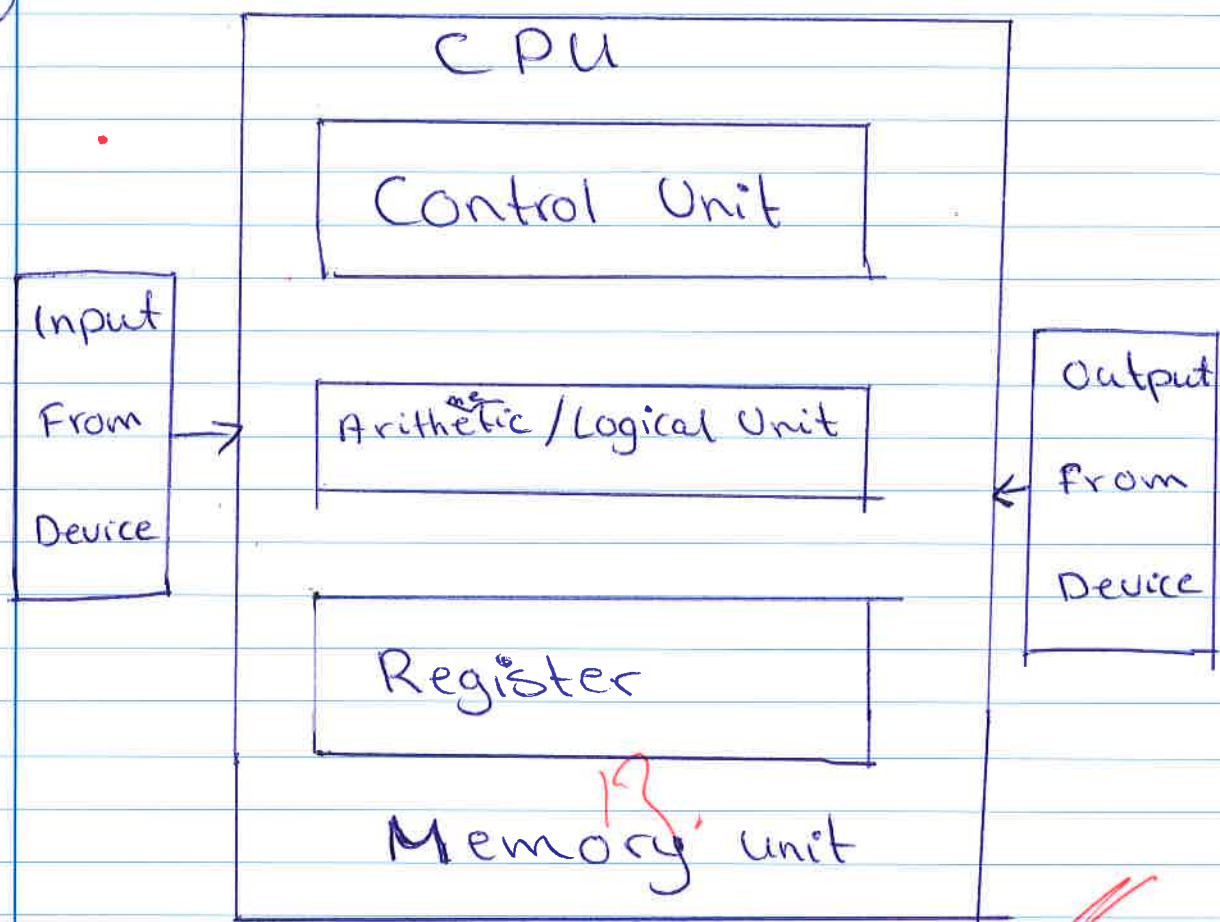
4-5 to



1. Instruction given to operating system through data input.
2. The system decodes the informations and gives direction through system.
3. It stores and completes the task & saves it.

Question Seven

a



- b The data have less chance for loss
- "Redundant" Control Transfer data
 - It works slower as the drives goes through separately, one at a time.

A B A D A B C D B C D

	A	B	C	D	AB	$\bar{A}\bar{B}$	CD	BCD	$\overline{BCD}$	X
1	0	0	0	0	0	1	0	0	1	0
	0	0	0	1	0	1	0	0	1	0
	0	0	1	0	0	1	0	0	1	0
	0	0	1	1	0	1	1	0	1	0
	0	1	0	0	0	1	0	0	1	0
	0	1	0	1	0	1	0	0	1	0
	0	1	1	0	0	1	0	0	1	0
	0	1	1	1	0	1	1	1	0	1
	1	0	0	0	0	1	0	0	1	0
	1	0	0	1	0	1	0	0	1	0
	1	0	1	0	0	1	0	0	1	0
	1	0	1	1	0	1	0	0	1	0
	1	1	0	0	1	0	0	0	1	0
	1	1	0	1	1	0	0	0	1	0
	1	1	1	0	1	0	0	0	1	0
	1	1	1	1	1	0	1	1	0	1
16	1	1	1	1	1	0	1	1	0	1

Below the table, each column is crossed out with a diagonal line.