

CYFENW:

ENW(AU) CYNTAF:

Cyfarwyddiadau i Ymgeiswyr

12 Tüdalen

5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.

6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.

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

(See the other side for English version)

Ffethwch rfa'u'r cwestiyau a ymgeisyd gennyh	
At Ddioben y Swyddfa	



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.**

[illegible]

Q1
(i) a $(769)_{10}$ change into binary (2)

R	769	$\div 2$
1	384	$\div 2$
0	192	$\div 2$
0	96	$\div 2$
0	48	$\div 2$
0	24	$\div 2$
0	12	$\div 2$
0	6	$\div 2$
0	3	$\div 2$
1	1	$\div 2$
1	0	$\div 2$

$= (1100000001)_2$ Ans.

(b) $(9A2)_{16}$ change into binary (2)

$= (9 \quad A \quad 2)_{16}$

$= 1001 \quad 1010 \quad 0010$

$= (100110100010)_2$ Ans.

(ii) a $(87)_{10}$ change into octal (8)

R	87	$\div 8$
7	10	$\div 8$
2	1	$\div 8$
1	0	$\div 8$

$= (127)_8$ Ans.

(b) $(5D9)_{16}$ change into Octal (8).

$$\begin{aligned}
 &= (5 \quad D \quad 9) \\
 &= (0101 \quad 1101 \quad 1001)_2 \\
 &= 01011011001 \\
 &= 010 \quad 111 \quad 011 \quad 001 \\
 &= 2 \quad 7 \quad 3 \quad 1 \\
 &= (2731)_8 \quad \text{Ans.}
 \end{aligned}$$

(iii) a $(1110101001)_2$ change into decimal (10)

$$\begin{aligned}
 &= (1 \times 2^9) + (1 \times 2^8) + (1 \times 2^7) + (0 \times 2^6) + (1 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (0 \times 2^1) + (1 \times 2^0) \\
 &= 512 + 256 + 128 + 0 + 32 + 0 + 8 + 0 + 0 + 1 \\
 &= (937)_{10} \quad \text{Ans.}
 \end{aligned}$$

(b) $(5DE)_{16}$ change into Decimal (10).

$$\begin{aligned}
 &= (5 \quad D \quad E) \\
 &= (5 \quad D \quad 14)_{16} \\
 &= (5 \times 16^2) + (D \times 16) + (14 \times 1) \\
 &= (5 \times 256) + (D \times 16) + (14 \times 1) \\
 &= 1280 + 0 + 14 \\
 &= (1294)_{10} \quad \text{Ans.}
 \end{aligned}$$

(iv) a $(4278)_{10}$ to Hexa (16).

R	4278	$\div 16$
6	267	$\div 16$
11	16	$\div 16$
0	1	$\div 16$
1	0	$\div 16$

$$\begin{aligned}
 &= (10116)_{16} \\
 &= (10B6)_{16}
 \end{aligned}$$

iv(b) $(670)_8$ change into Hexa (16).

$$\begin{aligned}
 &= (6 \ 7 \ 0)_8 \\
 &= (110 \ 111 \ 000)_2 \\
 &= (110111000)_2 \\
 &= (0001 \ 1011 \ 1000)_2 \\
 &= (1 \ B \ 8)_{16} \\
 &= (1B8)_{16} \quad \text{Ans.}
 \end{aligned}$$

- Q2.1 RAM.
 2 Ethernet Port.
 3 Microphone.
 4 Flash Drive
 5 Gamepad

Storage ~~X~~
 input ~~X~~
 input ~~X~~
 Memory ~~X~~
 input ~~X~~

Q3 $50000 / 2000 \times 2.5 \text{ GHz}$

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

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

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

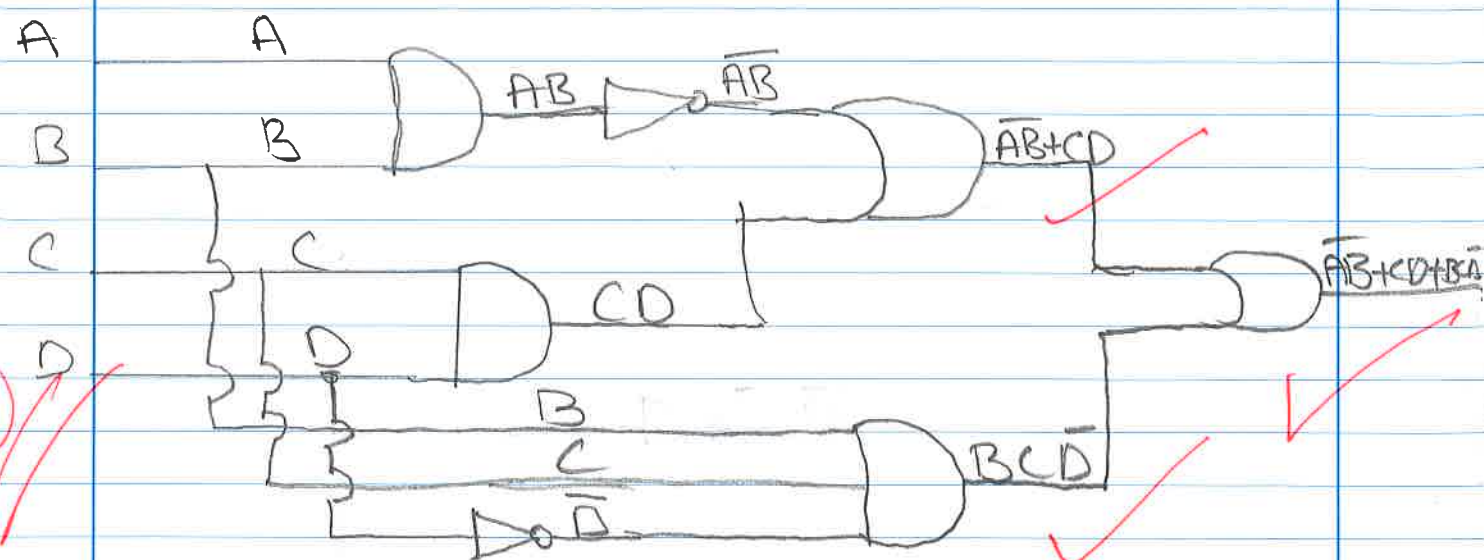
$$= 10,000 \times 10^{-9} \text{ sec}$$

$$= 10 \times 10^{-6}$$

$$= 10 \mu\text{s.} \quad \text{Ans.}$$

5

Q4 $X = \overline{AB} + CD + BCD$



TRUTH TABLE

	A	B	C	D	AB	$\overline{AB}$	CD	$\overline{AB} + CD$	$\overline{D}$	BC
1	0	0	0	0	0	1	0	1	1	0
2	0	0	0	1	0	1	0	1	0	0
3	0	0	1	0	0	1	0	1	1	0
4	0	0	1	1	0	1	1	1	0	0
5	0	1	0	0	0	1	0	1	1	0
6	0	1	0	1	0	1	0	1	0	0
7	0	1	1	0	0	1	0	1	1	1
8	0	1	1	1	0	1	1	1	0	1
9	1	0	0	0	0	1	0	1	1	0
10	1	0	0	1	0	1	0	1	0	0
11	1	0	1	0	0	1	0	1	1	0
12	1	0	1	1	0	1	1	1	0	0
13	1	1	0	0	1	0	0	0	1	0
14	1	1	0	1	1	0	0	0	0	0
15	1	1	1	0	1	0	0	0	1	1
16	1	1	1	1	1	0	1	1	0	1

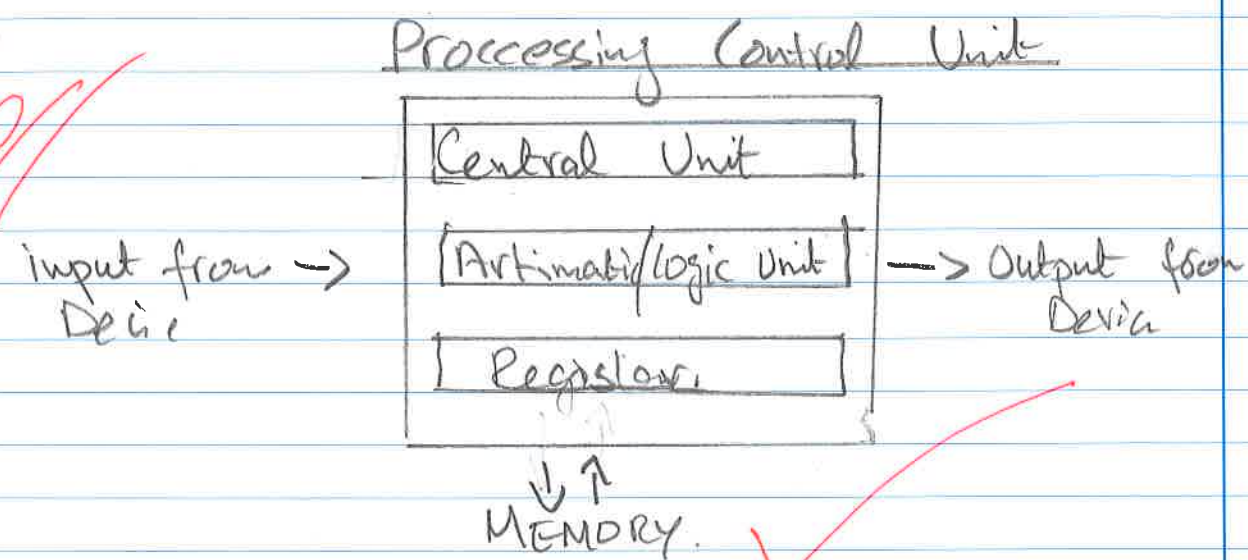
EXECUTE:-

This is the part which link together all the CPU instruction and stored in relevant memory.

STORAGE

Draw diagram Von Neuman architecture.

VON NEUMANN SKELETON



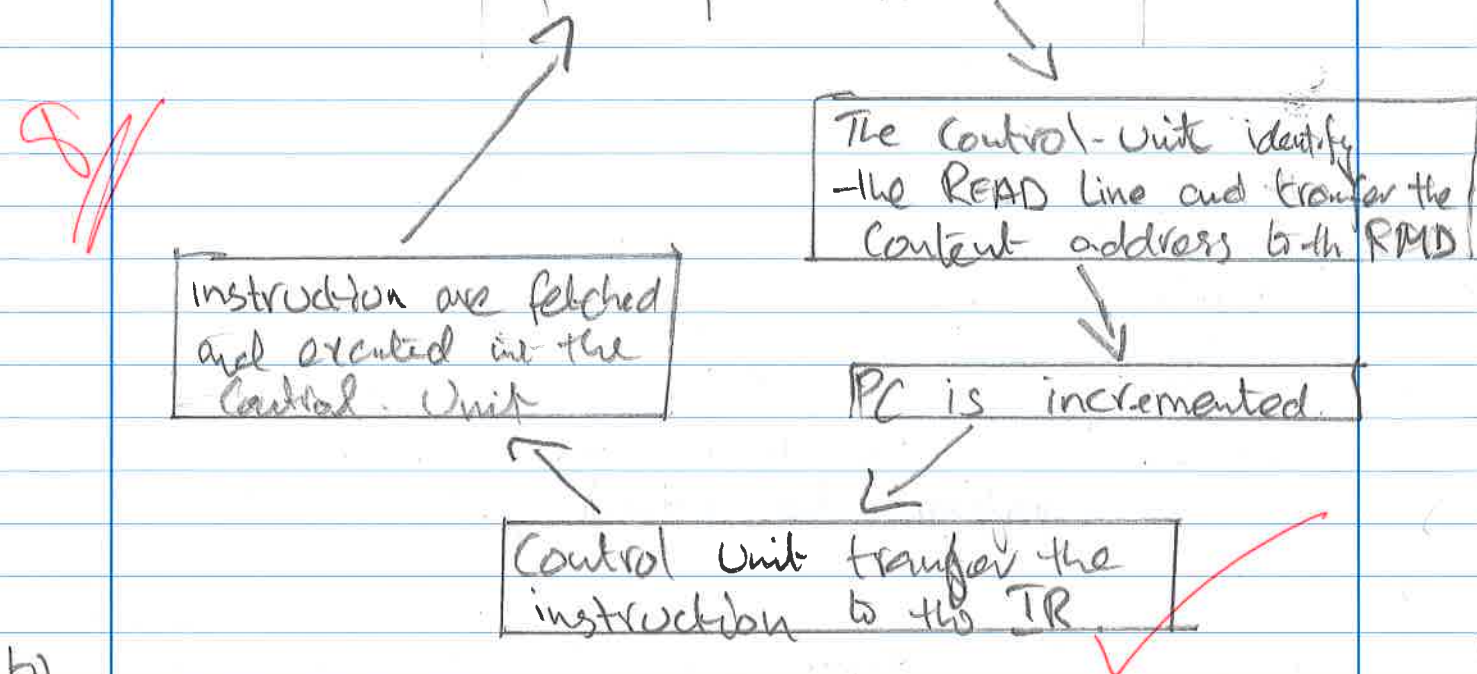
(3) ADVANTAGES OF VON NEUMANN:

1. As the data and instruction stored in same memory unit it increase the speed.
2. The Central Unit has control of the memory organization.

(C) DISADVANTAGE:-

1. As data and memory both in same memory unit, if data loss then there is no backup of the data.
2. If any error occur the computer idle.

The Fetch - Execute.



(b)
1.

FETCH:-

This involve retrieve the binary data instructions from the memory units and save into the current address register. This data store in "current address called "Programme Counter (PC)", then the CPU knows what instruction would be next.

2.

DECODE:-

This involve CPU identify the operation code (Op - code), part of instruction tells which programme perform. The op - code of the CPU allows action on some data another second would be data or where the data stored.

BCD	$\overline{AB} + CD + B\overline{C}\overline{D}$
0	1
0	1
0	1
0	1
0	1
1	1
0	1
0	1
0	1
0	1
0	1
0	0
0	0
1	1
0	1

10

Q5(a) RAID 0 Characteristics..

- (1) Raid level 0 divide into two blocks and write each block by numbers.
2. Raid level 0 stripes the data into multiple disks called "Stripping Data".

BENEFIT OF RAID 0:-

1. Because of Stripping into two blocks with multiple disks, it increase the efficiency.
2. Raid level 0 is simplified architect.

(b) RAID 1:-

Raid 1 is mirroring the data into two unit which called "Mirroring Data".

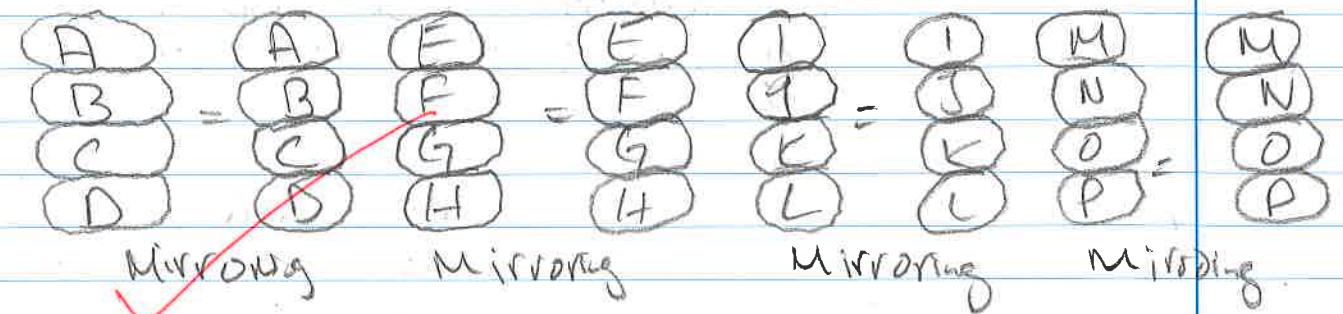
It transfer the data instruction one to another in parallel.

If one data lost it automatically backup the data with another one.

This is mostly used for software. It has very less chance of error occur.

This is more reliable and trustworthy.

Diagram of RAID 1:-



(c) Advantage of RAID 1.

If one data loss in RAID 1 then another 1 backup the data.

Disadvantage:-

As it is complicated to manufacture it cost a lot, if you buy one you have to buy another.

Q6
Ans

Draw The Fetch - Execute Cycle.

The Fetch - Execute

The Control Unit - Setup
address bus by transferring
the content of the PC to RAM.