SECTION B: 70 MARKS

BAHAGIAN B: 70 MARKAH

INSTRUCTION:
This section consists of **THREE (3)** structured questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **TIGA (3)** soalan berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1
C1

a) Define the computer bus.
Takrifkan bas komputer. [2 marks]
[2 markah]

CLO1
C1

b) List **FIVE (5)** major operations of computer system.
*Senaraikan **LIMA (5)** operasi utama sistem komputer.*
[5 marks]
[*5 markah*]

CLO1
C1

c) List **THREE (3)** types of cache memory.
*Senaraikan **TIGA (3)** jenis memori cache.*
[3 marks]
[3 markah]

CLO1
C2

d) Based on Figure B1(d):

Berdasarkan Rajah B1(d):

I. Classify J and K

Kelaskan J dan K

II. Give **THREE (3)** examples of suitable devices for J and K.

*Berikan **TIGA (3)** contoh peranti yang sesuai untuk J dan K.*

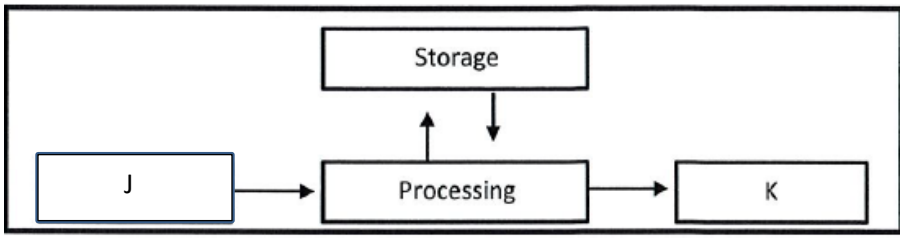


Figure B1(d) / *Rajah B1(d)*

[5 marks]

[*5 markah*]

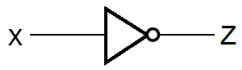
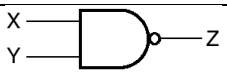
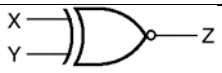
QUESTION 2

SOALAN 2

CLO1
C1

a) State the logic gate based on the symbol in table below :

Nyatakan get logik berdasarkan simbol dalam jadual di bawah.

No	Symbol	Logic Gate
i.		
ii.		
iii.		
iv.		

[4 marks]

[4 markah]

CLO1
C1

b) List **THREE (3)** types of flip-flop.

*Senaraikan **TIGA (3)** jenis flip-flop.*

[3 marks]

[3 markah]

CLO1
C2

c) Find the value of the A and B.

Cari nilai bagi A dan B.

i. $A_{16} = 10001_2 - 1011_2$

[3 marks]

[3 markah]

ii. $B_8 = 356_8 + 176_8$

[2 marks]

[2 markah]

CLO1
C2

d) Based on the timing diagram in Figure B2(d), show the output of negative clocked JK flip-flop for the given input waveforms which the Q initially 0.

Berdasarkan rajah pemasaan dalam Rajah B2(d)(ii), tunjukkan keluaran jam negatif JK flip-flop untuk bentuk gelombang input yang diberi yang Q pada mulanya 0.

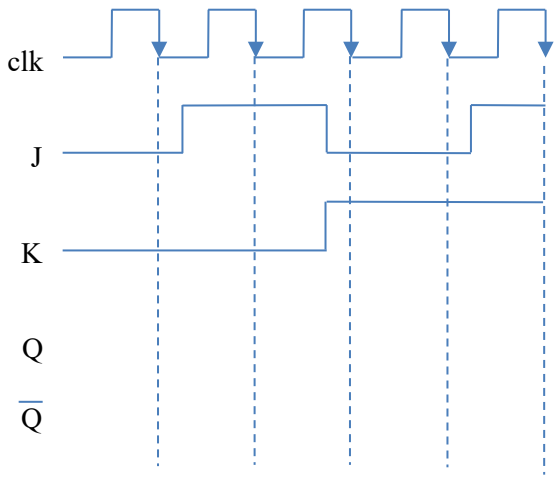


Figure B2(d) / *Rajah B2(d)*

[4 marks]

[4 markah]

CLO1
C2

e) Indicate the solution of $60_{10} - 45_{10}$ by using 2's complement.

Tunjukkan penyelesaian operasi untuk $60_{10} - 45_{10}$ dengan menggunakan pelengkap 2.

[5 marks]
[5 markah]

CLO1
C2

f) Transform the logic gate in Figure B3(f) with inputs P = 00110100 and Q = 11000110 into truth table to find X.

Tukar get logik dalam Rajah B3(f) dengan input P = 00110100 dan Q = 11000110 ke bentuk jadual kebenaran untuk mencari X.

Figure B3(f) / *Rajah B3(f)*

[4 marks]
[4 markah]

QUESTION 3

SOALAN 3

CLO1
C1

a) All instructions in assembly language must comply to the standard instruction format. Figure B3(a) shows the example of instruction statement. Name the element of labelled A, B, C, D and E.

Semua arahan dalam bahasa himpunan mesti mematuhi format arahan standard. Rajah B3(a) menunjukkan contoh pernyataan arahan. Namakan unsur berlabel A, B, C, D dan E.

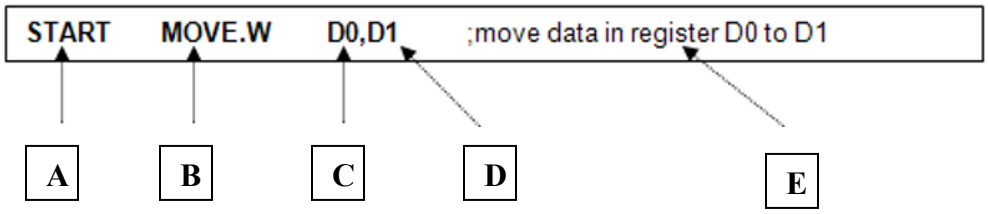


Figure B3(a) / *Rajah B3(a)*

[5 marks]
[5 markah]

CLO1
C2

b) Classify the addressing mode of the instructions below :

Kelaskan mod pengalamatan bagi arahan di bawah :

i. MOVE.B D2, $2000
ii. MOVE.W D1,D2
iii. ADD.B #24, D3
iv. MOVE.L (A0), D4
v. MOVEA.L A1,A2

[5 marks]
[5 markah]

CLO1
C2

c)

```
11      MOVE.B #5,D1
12      MOVE.W #@12,D2
13      ADD.W D1,D2
```

Based on the instruction above, classify the data type and data size for line 11 and 12.

Berdasarkan arahan di atas, kelaskan jenis data dan saiz data bagi arahan pada baris 11 dan 12.

[4 marks]

[*4 markah*]

CLO1
C2

d) Rewrite the instruction below completely based on mathematical equation given.

Tulis semula arahan di bawah dengan lengkap berdasarkan persamaan matematik yang diberi.

$(2F_{16} - 17_{10}) * \text{NOT } 24_8$

```
ORG $1000
_____ #$2F, D1
MOVE.W _____, D2
MOVE.W _____, D3
SUB.W _____
_____ D3
_____ D2, D3
RTS
```

i, **ii**, **iii**, **iv**, **v**, **vi**

[6 marks]

[*6 markah*]

CLO1
C1

e) List **TWO (2)** early phases of instruction cycle.

*Senaraikan **DUA (2)** fasa terawal dalam kitaran arahan.*

[2 marks]

[*2 markah*]

CLO1
C2

f) Based on binary tree in Figure B3(f):

Berdasarkan pokok binari dalam Rajah B3(f):

I. Show the Reverse Polish Notation

Tunjukkan Reverse Polish Notation

[1 mark]

[*1 markah*]

II. Illustrate the stack of Reverse Polish Notation.

Ilustrasikan timbunan bagi Reverse Polish Notation.

[3 marks]

[*3 markah*]

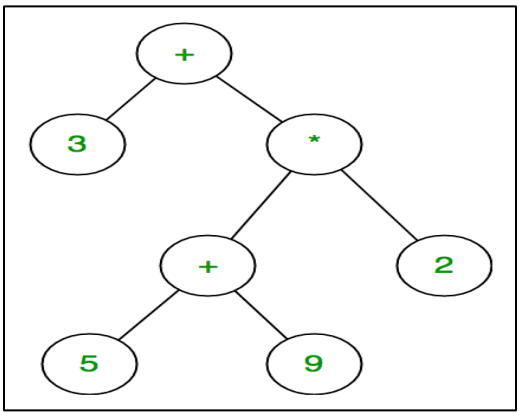


Figure B3(f) / *Rajah B3(f)*

CLO1
C2

g) Differentiate between Reduces Instruction Set Computer (RISC) and Complex Instruction Set Computer CISC.

Bezakan Reduced Instruction Set Computer (RISC) dan Complex Instruction Set Computer CISC.

[4 marks]

[*4 markah*]

END OF QUESTIONS

SOALAN TAMAT