SECTION A : 20 MARKS
BAHAGIAN A : 20 MARKAH

INSTRUCTION:
This section consists of **TWENTY (20)** objective questions. Mark your answers in the OMR form provided.

ARAHAN :
*Bahagian ini mengandungi **DUA PULUH (20)** soalan objektif. Tandakan jawapan anda di dalam borang OMR yang disediakan.*

CLO1 C2

1. The devices that provide the means for a computer to communicate with the user or other computers are referred to as:

   Peralatan yang digunakan komputer untuk berkomunikasi dengan pengguna atau komputer lain merujuk kepada :

   A. CPU
   B. ALU
   C. I/O
   D. Memory/*Ingatan*

CLO1 C1

2. The memory can transfer data or information from and to **EXCEPT** :

   *Ingatan boleh memindahkan data atau maklumat daripada atau kepada **KECUALI** :*

   A. ALU
   B. I/O
   C. Control Unit
   D. Data bus

CLO1 C1

3. Choose the **MOST** correct statement for a microprocessor.

   *Pilih kenyataan yang **PALING** betul untuk sesebuah Mikropemproses.*

   A. A microprocessor is an electronic device that consists of several pieces of transistors packed into one IC.
   Mikropemproses merupakan satu peranti elektronik yang mempunyai beberapa biji transistor yang terbenam dalam satu IC

   B. Microprocessor can gather data, process the data and make decision on the processed data.
   Mikropemproses boleh menghimpun data, memproses data tersebut dan membuat keputusan terhadap data yang telah diproses itu.

C. Microprocessor needs external supportive unit such as keyboard and monitor to work.
Mikropemproses memerlukan peranti sokongan luaran seperti papan kekunci dan monitor untuk bekerja.

D. Microprocessor is also called CPU.
Mikropemproses juga dipanggil CPU.

CLO1 C1

4. Below are the components that can be found in microprocessor-based system **EXCEPT**:
*Komponen di bawah merupakan komponen yang terdapat pada satu sistem berasaskan Mikropemproses **KECUALI**:*

A. Microprocessor

B. Microcontroller

C. Input unit

D. Memory unit

CLO3 C1

5. What instruction is use to begin a programme?
Apakah arahan untuk memulakan sesuatu program?

A. START

B. BEGIN

C. ON

D. GO

CLO3 C1

6. In programme, END instruction is used for:
Arahan END dalam program adalah untuk:

A. *Begin* (Mula)

B. *Jump*(Lompat)

C. *Link*(Hubung)

D. *Stop*(Berhenti)

CLO3
C2

7. **MOV AL, 2(Intel)**
MOVE D0,D1(Motorola)

What are the group instruction for the above command?
Apakah kumpulan arahan bagi arahan di atas?

A. Data transfer group
Kumpulan pindahan data

B. Arithmetic group
Kumpulan aritmetik

C. Logical group
Kumpulan logik

D. Control transfer group
Kumpulan kawalan penghantaran

CLO3
C1

8. Basic programming can be done through procedures like :
Asas pengaturcaraan dilakukan melalui langkah-langkah seperti berikut:

1. Programming
Aturcara

2. Logical design.
Rekabentuk logik

3. Definition of problem
Definasi masalah

4. Test run the program
Uji lari aturcara

5. Documentation of the program
Dokumentasi aturcara

A. 1, 2, 3, 4, 5

B. 2, 3, 4, 5, 1

C. 3, 2, 1, 4, 5

D. 3, 1, 5, 2, 4

CLO3
C2

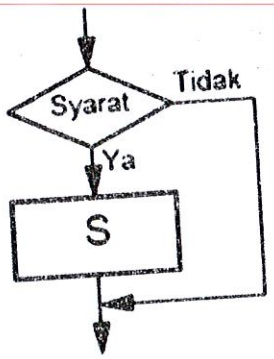
9. If stack uses LIFO (Last In First Out) algorithm, value will be rejected out one by one. Values that have been put into stack were 3, 7, 4, 5, 1. What are the output based on the value given above.

*Jika tindanan menggunakan **LIFO** (maklumat terakhir keluar dahulu), nilai akan ditolak keluar satu demi satu. Nilai yang telah dimasukkan ke dalam tindanan adalah 3, 7, 4, 5, 1.Apakah keluaran berdasarkan nilai yang diberi di atas.*

A. 3, 7, 4, 5, 1
B. 1, 5, 4, 7, 3
C. 7, 3, 5, 1, 4
D. 1, 3, 4, 7, 5

CLO3
C2

10. From picture below, what instruction are used?
Dari gambarajah di bawah, apakah arahan yang digunakan?



A. FOR
B. JMP
C. SKIP
D. BACK

CLO3
C1

11. Choose right answer for arithmetic operations.
Pilih jawapan yang betul bagi operasi aritmetik.

I. ADD
II. SUB
III. RETV
IV. JMP

A. I & II
B. I & III
C. I, II & III
D. I, II & IV

CLO3
C1

12. **MOV D0, D1(Intel)**
MOVE D0,D1(Motorola)

Instruction above have how many operand?
Arahan di atas mempunyai berapa operan?

A. 1
B. 2
C. 3
D. 4

CLO 2
C2

13. How many bytes can be stored in each of the 4K x 8 memory devices?
Berapa byte boleh disimpan pada setiap 4K x 8 peranti ingatan?

A. 2048 bytes
B.1024 bytes
C.4096 bytes
D.3196 bytes

CLO 2
C2

14. What is the input pin of the memory device that is connected to the address decoder to enable the memory device if the input is low?
Apakah pin masukan peranti ingatan yang disambungkan kepada pengkodan alamat untuk mengaktifkan peranti ingatan sekiranya masukan adalah rendah?

A. $\overline{EN}$
B. $\overline{CS}$
C. $\overline{WE}$
D. $\overline{OE}$

CLO 2
C2

15. The transistor base terminal of PROM is replaced by _____ so that it is user-programmable.

Terminal tapak bagi transistor PROM boleh digantikan dengan _____ supaya ia boleh diprogramkan semula.

A. fusible-link

B. negative

C. semiconductor

D. rom

CLO 2
C1

16. An EPROM is user-programmable, in other words, EPROM can be _____ and _____ as often as desired.

EPROM adalah komponen yang boleh diaturcarakan semula,dalam istilah lain, EPROM boleh _____ dan _____ sekerap mana yang diperlukan.

A. programmed & nonvolatile

B. manufacturer & erased

C. erased & reprogrammed

D. reprogrammed & programmed

CLO 4
C1

17. DMA is particularly suited for data transfer between the _____.

DMA sesuai digunakan bagi pemindahan data di antara _____.

A. disk drive and CPU

B. disk drive and RAM

C. disk drive and ROM

D. disk drive and I/O

CLO 4
C2

18. Which of the following is **TRUE** for parallel data transfer?
*Antara berikut, yang manakah **BENAR** untuk pemindahan data selari?*

i. Data transfer rate is faster
Kadar permindahan data lebih cepat

ii. Data is send through synchronous transfer
Data di hantar melalui pemindahan segerak

iii. Data is transferred in a single line sequentially
Data dipindahkan dalam satu talian secara berturutan

iv. Long distance data transfer is preferred it is cheaper
Menjadi pilihan penghantaran data jarak jauh kerana ia lebih murah

A. i,iii
B. i,ii
C. ii,iii,iv
D. i,ii,iii,iv

CLO 4
C1

19. PPI stands for _____.
*PPI merujuk kepada*_____.

A. peripheral programmable interface
B. programmable peripheral interface
C. programmable placement interface
D. programmable peripheral intercept

CLO 4
C1

20. An exchange of control signal between microprocessor and peripheral is essential if it involves a transfer of data between microprocessor and slower peripherals. This is known as :
Pertukaran isyarat kawalan antara mikropemproses dan persisian sangat diperlukan jikalau melibatkan pemindahan data antara mikropemproses dan persisian berkelajuan perlahan. Ini dikenali sebagai:

A. Transducer
B. Actuator
C. Handshaking
D. Interrupt

SECTION B : 30 MARKS
BAHAGIAN B : 30 MARKAH

INSTRUCTION:
This section consists of **TEN (10)** structured questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **SEPULUH (10)** soalan berstruktur. Jawab **SEMUA** soalan.*

CLO1
C1

QUESTION 1
Give the ranges size of bits, bytes and word.

SOALAN 1
Berikan saiz julat bagi bit, bait dan perkataan.

[3 marks]
[*3 markah*]

CLO1
C3

QUESTION 2
Draw the basic internal architecture of a microprocessor and list the function of **TWO** components that can be found in the microprocessor

SOALAN 2
*Lukiskan binaan dalaman bagi satu mikropemproses dan senaraikan fungsi bagi **DUA** komponen yang boleh didapati pada mikropemproses.*

[3 marks]
[*3 markah*]

CLO3
C2

QUESTION 3
List **THREE (3)** groups of instruction sets and give **ONE (1)** example for each group.

SOALAN 3

Senaraikan **TIGA (3)** kumpulan set arahan dan berikan **SATU (1)** contoh arahan bagi setiap kumpulan.

[3 marks]
[*3 markah*]

CLO3
C3

QUESTION 4

Identify type of addressing mode for the instruction given:

SOALAN 4

Kenalpasti jenis mod pengalamatan untuk arahan berikut:

Sample instruction (Intel)	**Sample instruction (Motorola)**	**Addressing Mode**
LXI B, 2050H	MOVE.B #$12,D0	
CMA	BSR	
MOV M,A	CLR.L (A3)	

[3 marks]
[*3 markah*]

CLO3
C3

QUESTION 5

List **FOUR (4)** field of format to write a program. Give **ONE (1)** example of the listed field of format.

SOALAN 5

*Senaraikan **EMPAT (4)** medan untuk menulis aturcara. Berikan **SATU (1)** contoh untuk medan yang disenaraikan.*

[3 marks]
[*3 markah*]

CLO3
C4

QUESTION 6

Write instructions for process below.

SOALAN 6

Tulis arahan untuk proses di bawah.

i. Add **TWO (2)** datas which are stored in memory at the register A(Intel)/D0 (Motorola) and register C(Intel)/D1(Motorola).
Campurkan **DUA (2)** data yang mana ia disimpan dalam Daftar A(Intel)/ D0(Motorola) dan Daftar C(Intel)/D1(Motorola).

ii. Store the result in the memory at the address 2060H.
Simpan keputusan dalam ingatan pada alamat 2060H.

[3 marks]
[*3 markah*]

CLO 2
C3

QUESTION 7

A memory chip with capacity of 5k x 8, determine,

a) Numbers of data lines

b) Numbers of address lines

SOALAN 7

Cip ingatan dengan kapasiti 5k x 8, tentukan,

a) bilangan talian data

b) bilangan talian alamat

[3 marks]
[*3 markah*]

CLO 2
C2

QUESTION 8

State the differences between primary and secondary memory.

SOALAN 8

Nyatakan perbezaan diantara ingatan utama dan sekunder.

[3 marks]

[*3 markah*]

CLO 4
C2

QUESTION 9

There are **TWO (2)** techniques of sending data. One of the techniques is sending data in series. List **THREE (3)** features to identify this technique.

SOALAN 9

*Terdapat **DUA (2)** jenis teknik pemindahan data. Satu daripada teknik pemindahan data secara sesiri. Senaraikan **TIGA (3)** ciri bagi mengenal pasti teknik ini.*

[3 marks]

[*3 markah*]

CLO 4
C1

QUESTION 10

List **TWO (2)** types of interrupt.

SOALAN 10

Senaraikan ***DUA (2)** jenis sampukan*

[3 marks]

[*3 markah*]

SECTION C : 50 MARKS
BAHAGIAN C : 50 MARKAH

INSTRUCTION:
This section consists of **TWO (2)** essay questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **DUA (2)** soalan esei. Jawab **SEMUA** soalan.*

QUESTION 1
SOALAN 1

CLO3
C2

(a) State the functions of an addressing mode in assembly language programming.
Nyatakan fungsi mod pengalamatan di dalam pengaturcaraan bahasa himpunan.

[4 marks]
[*4 markah*]

CLO3
C4

(b) State the status of flag for the following operation:
Nyatakan status bendera untuk operasi berikut :

i. 72H + C3H

ii. 21H AND C3H

iii. 74H OR 24H

[9 marks]
[*9 markah*]

CLO3
C3

(c) List **TWO (2)** instructions for each group instructions set below using microprocessor 68000 or 8086 :

*Senaraikan **DUA (2)** suruhan untuk setiap kelas set suruhan di bawah menggunakan mikropemproses 68000 atau 8086.*

i. Data movement / *Pergerakan data*
ii. Arithmetic / *Aritmetik*
iii. Logic / *Logik*

[6 marks]
[*6 markah*]

CLO3 C4

2. Identify values of D2 and A1 for MC68000 (Motorola) and values of A and C for 8086 (Intel) after executing instructions below.

Dapatkan nilai D2 dan A1 untuk MC68000(Motorola) dan nilai A dan C untuk 8086 (Intel) setelah melaksanakan arahan di bawah.

Motorola				Intel
	Register	Address	Memory	
D1	44556677	00002300	1122	A = 44H
			3344	B = 23H
D2	8899AABB		5566	C = 78H
			7788	
A1	00002302		99AA	
MOVE.L (A1)+, D2				MOV C,A

[6 marks]
[*6 markah*]

QUESTION 2
SOALAN 2

CLO2 C2

(a) Describe the meaning of volatile and non-volatile memory.

Terangkan makna ingatan meruap dan tidak meruap.

[4 marks]
[*4 markah*]

CLO2 C3

(b) Referring to Random Access Memory chip of 5Kx8 capacity, determine:

Merujuk kepada kapasiti Ingatan Capaian Rawak 5Kx8, tentukan:

i. Number of data lines. / *Bilangan talian data.*

ii. Number of address lines. / *Bilangan talian alamat.*

iii. Chip capacity in Bytes. / *Kapasiti cip dalam Bytes.*

iv. Draw the pins layout block diagram for the chip. / *Lukis lakaran pin gambarajah blok untuk cip.*

[10 marks]
[*10 markah*]

CLO2
C3

(c) The microprocessor has the following characteristics: 8 bit data bus, 16 bit address bus, 12KB read only memory, 16KB random access memory and 4KB input-output ports. Build a memory map for this microprocessor with start and end address for each devices. Assume start address for the system is 0000H.

Mikropemproses mempunyai ciri-ciri berikut: 8 bit bas data, 16 bit bas alamat, 12KB ingatan baca sahaja,16KB ingatan capaian rawak dan 4KB port masukan dan keluaran. Bina pemetaan ingatan untuk mikropemproses ini dengan alamat mula dan akhir untuk setiap peranti. Anggap alamat permulaan sistem adalah 0000H.

[11 marks]
[*11 markah*]

SOALAN TAMAT