No. Matrik *Matric No.*	No. Kad Pengenalan *Identity Card No.*	No. Tempat Duduk *Seat No.*

(Isikan maklumat dengan lengkap)

KEMENTERIAN PENDIDIKAN MALAYSIA

BAHAGIAN MATRIKULASI
MATRICULATION DIVISION

PEPERIKSAAN SEMESTER PROGRAM MATRIKULASI
MATRICULATION PROGRAMME EXAMINATION

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU.
DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO.

Untuk Kegunaan Pemeriksa *For Examiner's Use*		
No. Soalan *Question No.*	Markah *Mark*	
	Pemeriksa *Examiner*	KP / KKP
1		
2		
3		
4		
JUMLAH *TOTAL*		

Kertas soalan ini mengandungi **12** halaman bercetak.
This question paper consists of **12** *printed pages.*

INSTRUCTIONS TO CANDIDATE:

This question paper consists of 4 questions.

Answer **all** questions in the space provided.

The use of non-programmable scientific calculator is permitted.

ARAHAN KEPADA CALON:

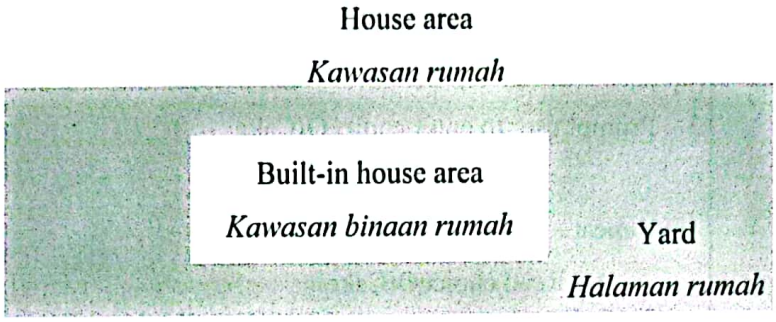
Kertas soalan ini mengandungi **4** *soalan.*

Jawab ***semua*** *soalan di ruang yang disediakan.*

Penggunaan kalkulator saintifik yang tidak boleh diprogramkan dibenarkan.

1 (a) The wage to mow the yard of a house is based on the price of diesel used to mow it. The yard to be mowed is shown in the shaded area given in the figure below.

Upah untuk memotong rumput halaman sebuah rumah adalah berdasarkan harga diesel yang digunakan untuk memotong rumput halaman tersebut. Halaman yang perlu dipotong rumput ditunjukkan oleh kawasan berlorek dalam rajah di bawah.



You are given the length and width of the house area and the length and width of the house. The price of diesel used is RM2.00 per square meter.

Identify the input, process and output to calculate and display the wage of mowing the yard of the house.

Anda diberi panjang dan lebar kawasan rumah dan serta panjang dan lebar binaan rumah tersebut. Harga diesel yang digunakan adalah RM2.00 *bagi setiap meter persegi.*

Kenal pasti input, proses dan output bagi mengira dan memaparkan upah untuk memotong rumput halaman rumah tersebut.

[10 *marks*]
[10 *markah*]

Input	**Process** ***Proses***	**Output**

(b) Draw a **flowchart** based on the following pseudocode about cake ordering.
*Lukis **carta alir** berdasarkan pseudokod berikut mengenai pemesanan kek.*

```
1. Start

2. Display cake menu: 1. Vanilla
                      2. Chocolate

3. Prompt user to enter choiceOfCake

4. Repeat
       4.1 Read choiceOfCake
   While (choiceOfCake is less than 1 or more than 2)

5. If (choiceOfCake is 1)
       5.1 Set cakeName to "Vanila"
       5.2 Set unitPrice  to 12
   Else
       5.3 Set cakeName to "Chocolate"
       5.4 Set unitPrice  to 10

6. Prompt user to enter quantityOfCake

7. Repeat
       7.1 Read quantityOfCake
   While (quantityOfCake is less than or equal to 0)

8. Calculate the total price:
       totalPrice = unitPrice x quantityOfCake

9. Display the cakeName, quantityOfCake and totalPrice
10. End
```

[15 *marks*]
[15 *markah*]

2 (a) There are four characteristics of Object Oriented Programming (OOP).

Explain any **two (2)** of the characteristics.

Terdapat empat ciri-ciri Pengaturcaraan Berasaskan Objek (OOP).

*Terangkan sebarang **dua** (2) daripada ciri-ciri tersebut.*

[4 *marks*]
[4 *markah*]

(b) Write the Java assignment statements for the following algebraic equations.

Tulis pernyataan umpukan Java untuk persamaan algebra berikut.

(i) $a = y^2x^2 - y + 2xy$

[2 marks]
[2 *markah*]

(ii) $b = \sqrt{2x + 12} - 2x$

[2 *marks*]
[2 *markah*]

(c) Determine the output of the following Java code segment.
Tentukan output untuk segmen kod Java berikut.

```
int a = 3, c = 15;
double b = 0.5, d = 15 * b;
System.out.println( c % a - a % c);
System.out.println( 4 * d / (b / a) );
System.out.println( (25 - c) / b * 13 + (-5) );
```

[6 *marks*]
[6 *markah*]

3 (a) The following Java program displays a line of asterisks '*'.

Program Java berikut memaparkan satu garis tanda bintang ''.*

```
import java.util.Scanner;
public class Main
{
  public static void main(String[] args)
  {
     Scanner in = new Scanner(System.in);
     System.out.println("Enter size of line: ");
    int line = in.nextInt();

     for (int i = 1; i <= line; i++)
     {
          System.out.print("*");
     }
  }
}
```

Modify the above program such that it displays a line with asterisks '*' in even position and dashes '-' in odd position. Output sample of the modified Java program is as shown in the figure below.

Ubah suai program di atas supaya memaparkan satu garis yang mempunyai tanda bintang '' pada posisi genap dan tanda hubung '-' pada posisi ganjil. Sampel output program Java yang telah diubah ditunjukkan dalam rajah di bawah.*

```
Enter size of line:
9
-*-*-*-*-
```

[5 *marks*]
[5 *markah*]

(b) Given below, two code segments that evaluates body temperature and COVID-19 related symptoms.

Code segment A – This segment evaluates whether the given body temperature (in Celsius) is between 35.0 (inclusive) and 38.0 (exclusive). If the value entered is not between this range, it will display "`Invalid value. Enter body temperature again : `". Use an appropriate control structure to repeat this input validation until the user enters a valid value.

Code segment B – This segment evaluates the Boolean input for variables `cough`, `runnyNose` and `soreThroat`. Use an appropriate control structure to evaluate the variables. If all of them are false, it will display "`Free from COVID-19`", otherwise it will display "`Must be quarantined`".

Complete the following Java code segments that evaluates **four (4)** input values from a user:

Diberi di bawah, dua segmen kod yang menilai suhu badan dan simptom-simptom berkaitan COVID-19.

***Segmen kod* A** – *Segmen ini menilai sama ada suhu badan (dalam Celsius) di antara* 35.0 *(inklusif) dan* 38.0 *(eksklusif). Sekiranya nilai yang dimasukkan tidak berada di antara julat ini, ia memaparkan* "`Invalid value. Enter body temperature again : `". *Gunakan struktur kawalan yang bersesuaian untuk mengulang pengesahan input sehingga pengguna memasukkan nilai yang sah.*

***Segmen kod* B** – *Segmen ini menilai input Boolean untuk pemboleh ubah* `cough`, `runnyNose` *dan* `soreThroat`. *Gunakan struktur kawalan yang bersesuaian untuk menilai pembolehubah-pembolehubah tersebut. Sekiranya nilai semua pembolehubah adalah palsu, ia akan memaparkan* "`Free from COVID-19`", *sekiranya tidak, ia akan memaparkan* "`Must be quarantined`".

Lengkapkan segmen kod Java berikut yang menilai ***empat* (4)** *nilai input dari seorang pengguna:*

[10 *marks*]
[10 *markah*]

```
import java.util.Scanner;

public class Covid19Checker {
  public static void main(String args[]) {
    Scanner scanner = new Scanner (System.in);
    double bodyTemp;
    boolean cough, runnyNose, soreThroat;

    System.out.println("Enter body temperature : ");
    bodyTemp = scanner.nextDouble();
```

Code segment A

Segmen kod A

```
    System.out.println("Has cough? : ");
    cough = scanner.nextBoolean();
    System.out.println("Has runny nose? : ");
    runnyNose = scanner.nextBoolean();
    System.out.println("Has sore throat? : ");
    soreThroat = scanner.nextBoolean();

    System.out.println("Temperature :  " + bodyTemp);
    System.out.println("Cough :  " + cough);
    System.out.println("Runny nose :  " + runnyNose);
    System.out.println("Sore throat :  " + soreThroat);
```

Code segment B

Segmen kod B

```
} // end of main
} // end of class
```

4 An online restaurant has a salary system based on position level. The salary is being paid on weekly basis. The restaurant has a cook (salary on hourly basis) and a salesperson (fixed salary and sales commission). The following is the details of salary payments for each position level:

Position level: Cook
Salary paid per week: First 30 hours at a fixed rate of RM20.00 per hour. The next following hours, overtime rate at 1.5% of the fixed rate hourly.

Position level: Salesperson
Salary paid per week: Fixed salary of RM200.00 plus commission 10% of the total sales per week.

Write a complete Java program that prompts user to enter cook's hours worked per week, and salesperson's total sales per week. Display the weekly salary for both cook and salesperson.

The process to calculate the amount of weekly salary for the cook uses the method `calcSalaryCook(int hour)` which returns the weekly salary for the cook, and for the salesperson the process uses the method `calcSalarySalesPer(double sales)` which returns the weekly salary for the salesperson.

Sebuah restoran dalam talian mempunyai sistem gaji berdasarkan peringkat jawatan. Gaji dibayar setiap minggu. Restoran ini mempunyai tukang masak (gaji setiap jam) dan jurujual (gaji tetap dan komisen jualan). Berikut adalah perincian pembayaran gaji untuk setiap peringkat jawatan:

Peringkat jawatan: Tukang masak
Gaji dibayar setiap minggu: 30 *jam pertama pada kadar tetap* RM20.00 *setiap jam. Waktu berikutnya, kadar lebih masa ialah* 1.5 *dari kadar tetap setiap jam.*

Peringkat jawatan: Jurujual
Gaji dibayar setiap minggu: Gaji tetap RM200.00 *ditambah komisen* 10% *dari jumlah jualan setiap minggu.*

Tulis program Java yang lengkap yang meminta pengguna masukkan jam kerja setiap minggu bagi tukang masak, dan jumlah jualan setiap minggu bagi jurujual. Paparkan gaji mingguan untuk kedua-dua tukang masak dan jurujual.

Proses untuk mengira jumlah gaji mingguan untuk tukang masak menggunakan metod `calcSalaryCook(int hour)` *yang memulangkan gaji mingguan untuk tukang masak, dan untuk jurujual proses tersebut menggunakan metod* `calcSalarySalesPer(double sales)` *yang memulangkan gaji mingguan untuk jurujual.*

[16 *marks*]
[16 *markah*]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT