Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022

COURSE NAME	:	OBJECT ORIENTED PROGRAMMING
COURSE CODE	:	BIC 20904
PROGRAMME CODE	:	BIS / BIP / BIW / BIM
EXAMINATION DATE	:	JANUARY / FEBRUARY 2022
DURATION	:	3 HOURS
INSTRUCTION	:	1. ANSWER **ALL** QUESTIONS.
		2. THIS FINAL EXAMINATION IS CONDUCTED ONLINE AND CLOSE BOOK.

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES.

Q1 Answer **Q1(a)-Q1(c)** based on **Figure Q1** and **Table Q1**.

IPod
- song: String - volumeLevel: int - on: boolean
+ IPod() + setTurnOn(): void + setTurnOff(): void + setSong(newSong: String): void + setVolumeLevel(newVolumeLevel: int): void + getSong(): String + volumeUp(): int + volumeDown(): int

FIGURE Q1

TABLE Q1: The attributes value for `IPod`

`song`	Muse – Time is Running Out
`volumeLevel`	10
`on`	true

(a) Write the complete program based on the UML class given.

(15 marks)

(b) Write a program named `RunIPod` that creates an object of `IPod` with the value of the attributes as shown in **Table Q1**.

(6 marks)

(c) Display the value of `song` that has been assigned in **Q1(b)**.

(2 marks)

Q2 Answer **Q2(a)-Q2(f)** based on **Figure Q2**.

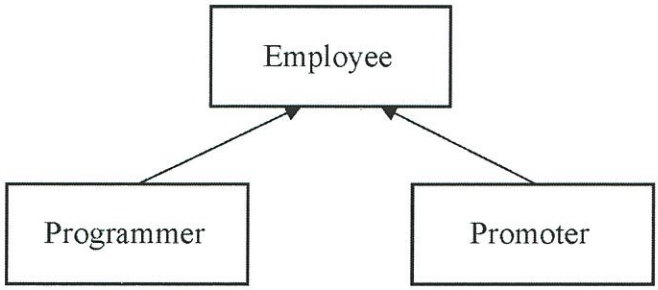

FIGURE Q2

(a) Create a class named `Employee` having the private attributes of name, address, phone number, salary and email address.

(6 marks)

(b) Write a mutator for `Employee` named `setName()` to assign name.

(3 marks)

(c) Write an accessor for `Employee` named `getName()` to display name.

(3 marks)

(d) Create a class named `Programmer` that inherits `Employee` with the private attributes of programming language and project manager name.

(4 marks)

(e) Create a class named `Promoter` that inherits `Employee` with the private attributes of total commission and total sales.

(4 marks)

(f) Write an overloading method for `setName()`in `Programmer` with additional parameter to set project manager's name.

(4 marks)

Q3 Answer **Q3(a)-Q3(h)** based on **Figure Q3**.

```
Abstract class Customer {

int extensionMonth;
double totalPayment;
double discount;
final int FREEFOODVOUCHER = 2;

public abstract void totalPaymentAfterDiscount();
public abstract void extensionMonth();

public void display() {

   System.out.println("To display something.");

}

}
```

FIGURE Q3

(a) Create a class named `TripleParkCustomer` that inherits `Customer`.

(2 marks)

(b) Define `totalPaymentAfterDiscount()` in `TripleParkCustomer` to grant a discount of 10% from the total payment.

(4 marks)

(c) Define `extensionMonth()` in `TripleParkCustomer` to grant an extension of 10 months.

(3 marks)

(d) Override `display()` in `TripleParkCustomer` to display the payment after discount, the months of extension and the number of free food voucher.

(4 marks)

(e) Create a class named `DoubleParkCustomer` that inherits `Customer`.

(2 marks)

(f) Define `totalPaymentAfterDiscount()` in `DoubleParkCustomer` to grant a discount of 5% from the total payment.

(4 marks)

(g) Define `extensionMonth()` in `DoubleParkCustomer` to grant an extension of 5 months.

(3 marks)

(h) Override `display()` in `DoubleParkCustomer` to display the payment after discount and the months of extension.

(3 marks)

Q4 Answer **Q4(a)-Q4(c)** based on **Figure Q4(a)** and **Figure Q4(b)**.

```
Line    Code
1       //House.java
2       package myhome;
3
4       public class House {
5             private int noOfRoom;
6             private int noOfToilet;
7             public double squareFeet;
8       }
```

FIGURE Q4(a)

```
Line    Code
1       //SemiDetached.java
2       package myhome;
3
4       public class SemiDetached extends House {
5
6           public static void main(String[] args) {
7                 House myHouse = new House();
8                 myHouse.noOfRoom = 4;
9                 myHouse.noOfToilet = 2;
10                myHouse.squareFeet = 3000.00;
11      }
```

FIGURE Q4(b)

(a) Is the code at line 8 and 9 in `SemiDetached.java` is legit? Justify your answer.
(3 marks)

(b) Rewrite `House.java` at line 5 and 6 for the variables can be accessed from the same class, from the same package, and from a subclass in a different package.
(2 marks)

(c) Based on the code you have written in **Q4(b)**, write a class named `Bungalow` in a package named `mysecondhome`. Then, assign the value of `noOfRoom`, `noOfToilet` and `squareFeet` to 6, 4 and 5000.00 respectively.
(5 marks)

- END OF QUESTIONS –