UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	OBJECT ORIENTED PROGRAMMING
COURSE CODE	:	DAT 20303
PROGRAMME CODE	:	DAT
EXAMINATION DATE	:	DECEMBER 2019 / JANUARY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWERS ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

SECTION A

Answer TRUE (T) or FALSE (F) for the following questions.

Q1 Machine language made programming simpler.

(1 mark)

Q2 In object-oriented programming, operation of software and data it operates on modelled separately.

(1 mark)

Q3 A class may not have a main method.

(1 mark)

Q4 Java virtual machine translates instructions in bytecode as a single unit.

(1 mark)

Q5 Selection statement use logical conditions that evaluates to Boolean value.

(1 mark)

Q6 Repetition statement executes statements repeatedly until condition false.

(1 mark)

Q7 Method widens the scope of debugging.

(1 mark)

Q8 Method must return a value.

(1 mark)

Q9 Constructors can be overloaded by different arguments.

(1 mark)

Q10 There cannot be any return statement in constructor.

(1 mark)

Q11 A constructor is called "Default Constructor" when it doesn't have any parameter.

(1 mark)

Q12 Inside constructor, you can access all object attributes and assign them to their default values or any desired values.

(1 mark)

Q13 A class can have only one constructor.

(1 mark)

Q14 Constructor cannot be overloaded.

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(1 mark)

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Q15   A class cannot be defined without constructor.

(1 mark)

Q16   Creating an instance is referred to as initialization.

(1 mark)

Q17   An object is created from a method.

(1 mark)

Q18   Array is an object.

(1 mark)

Q19   Array can store object.

(1 mark)

Q20   The length of an array can be obtained using the size of operator.

(1 mark)

SECTION B

Q21   (a)   Draw a student management system use case diagram based on the following scenario.

There are two actors named student and a teacher. There are a total of five use cases that represent the specific functionality of the system. A student actor can check attendance, timetable as well as test marks. The teacher actor can interact with all the functionalities of the system. This actor can also update the attendance of a student and marks of the student.

(11 marks)

(b)   Sketch the activity diagram of order processing based on the following problem description.

Once the order is received, the activities split into two parallel sets of activities. One side fills and sends the order while the other handles the billing. On the fill order side, the method of delivery is decided conditionally. If it is a rush order, overnight delivery performed. Otherwise, regular delivery performed. The billing side involves sending of invoice to the customers and receiving payment from them. Finally the parallel activities combine to close the order.

(13 marks)

Q22   (a)   Justify why the following variable names are invalid.

(i)   item-quantity
(ii)   1chosenDrink
(iii)   final

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(3 marks)

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(b)   Determine the result of the following arithmetic operations.

    (i)   3 / 2
    (ii)   3.0 / 2
    (iii)   3 / 2.0

(3 marks)

(c)   Classify the type of statement for each of the following.

    (i)   `total = 0;`
    (ii)   `student++;`
    (iii)   `System.out.println("Pass");`

(3 marks)

(d)   Determine the output of the following statements.

    (i)   `System.out.println("1 + 2 = " + 1 + 2);`
    (ii)   `System.out.println("1 + 2 = " + (1 + 2));`
    (iii)   `System.out.println(1 + 2 + "abc");`

(3 marks)

Q23   Convert the following nested `for` loops to nested `while` loops.

```
for (int i = 1; i <= 5; ++i){
    System.out.println("Outer loop iteration " + i);
    for (int j = 1; j <=2; ++j){
        System.out.println("i = " + i + "; j = " + j);
    }
}
```

(3 marks)

Q24   Explain the process of defining an array in the following line of code:
        int totalScore = new int[30];

(4 marks)

Q25   (a)   Differentiate between class and object.

(2 marks)

    (b)   Distinguish state from behavior.

(2 marks)

    (c)   Differentiate between instance variable and local variable.

(2 marks)

    (d)   Distinguish method from constructor.

(2 marks)

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(e)   List the steps of creating an object from a class.

(3 marks)

Q26   Modify the following program segment using an appropriate exception to handle the error.

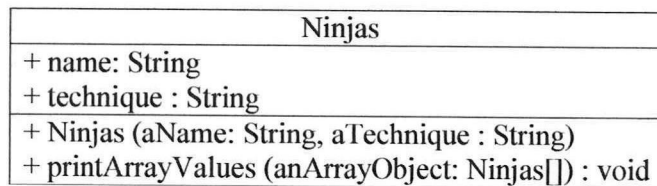```
int a[] = new int[5];
a[5] = 9;
```

(6 marks)

**SECTION C**

**Q27**   Ino, Naruto, and Kakashi are ninjas. Each of them have different specialties of ninja technique. Ino is gifted with a technique named "mind switching". Naruto is gifted with a technique named "shadow clone". Kakashi is famous for his "copy eye" technique.

Write a complete program which:
1) Declare and initialize an array object named array_of_ninjas to hold the value for each of the given ninja name and technique, and
2) Access the arrays element using repetition statement by calling a method printArrayValues which prints the data of each object.

Use the details in the following class diagram in writing up your code.

| Ninjas |
| --- |
| + name: String |
| + technique : String |
| + Ninjas (aName: String, aTechnique : String)<br>+ printArrayValues (anArrayObject: Ninjas[]) : void |

The output of your coding should look like the following.

```
--- exec-maven-plugin:1.5.(
Ninja1:
Name: Ino
Technique: mind switching
Ninja2:
Name: Naruto
Technique: shadow clone
Ninja3:
Name: Naruto
Technique: copy eye
------------------------------
BUILD SUCCESS
------------------------------
```

(20 marks)

-END OF QUESTIONS –