

CONFIDENTIAL



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2021/2022**

COURSE NAME : OBJECT ORIENTED PROGRAMMING
COURSE CODE : DAT 20303
PROGRAMME : DAT
EXAMINATION DATE : JULY 2022
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : 1. ANSWER ALL QUESTIONS.
2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**.
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

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

CONFIDENTIAL

TERBUKA

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. (1 mark)

- 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) lchosenDrink
- (iii) final

(3 marks)

(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) `staff++;`
- (iii) `System.out.println("Login");`

(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 + "pisang goreng");`

(3 marks)

(e) 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)

Q23 (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)

(e) List the steps of creating an object from a class. (3 marks)

(f) Explain the process of defining an array in the following line of code:
`int totalScore = new int[30];`
(4 marks)

(g) Modify the following program segment using an appropriate exception to handle the error.
`int a[] = new int[5];
a[5] = 9;`
(6 marks)

Q24 (a) Explain **FIVE (5)** features or attributes of java programming language. (10 marks)

(b) Every Malaysian knows what their national identity card (IC) number means. The first six digits are your date of birth, the middle two digits indicate where you were born, and the last digit indicates your gender; an odd number for men, and an even number for women.

Write a complete Java code program that will asked the user to key in their IC number. The program will take the IC number entered by the user and perform arithmetic calculations on it to determine whether the user is a man or a woman. If the user is a woman, the program will prompt the user with a message “You are FEMALE”, but if the user is a man the program will prompt the user with a message “You are MALE”.

(10 marks)

- END OF QUESTIONS -