

Half-yearly Test Feb 2021

Computing year 10

WHERE NECESSARY ALWAYS SHOW THE WORKING

- 1) A relational database about paintings and art museums consists of the following two tables.

ArtMuseum (idMuseum, name, address, tel)

Painting (idPainting, description, artist, year)

- a) What is the relationship between these two tables? [1]
 - b) Name the primary keys. [1]
 - c) What is a foreign field? [1]
 - d) Include the missing foreign field in the above database. [1]
- 2) Write a for loop that produces the sequence 3, 6, 9 ... 30 [2]
- 3) Write two nested for loops that produce the following output. [3]

1
12
123
1234
12345

- 4) Consider the following array named num.

0	1	2	3	4	5	6	7	8	9
2	4	-5	1	3	4	1	3	-3	-4

- a) What is the value of the following expressions?
 - i). num[2] + num[6] [1]
 - ii). num[3+5] + num[9] [1]
 - b) Show the values inside the array following the execution of the following code.

```
for (int i=0; i<=9; i++)  
    num[i] = num[i] + i;
```

 [2]
- 5) Draw the output of the following program. [2]

```

public class Methods1
{
    public static void main (String[] args)
    {
        stars();
        plusses (3);
        stars();
    }

    public static void stars ()
    {
        System.out.println ("*****");
    }

    public static void plusses (int n)
    {
        for (int i=1; i<=n; i++)
            System.out.print ("+");
        System.out.println();
    }
}

```

- 6) Write a program that consists of three methods. One method calculates the volume of a cylinder ($\pi r^2 h$), another calculates the volume of a sphere ($V = \frac{4}{3} \pi r^3$) and the third is the method main. The main method presents a simple menu so that the user can choose which volume to calculate. [6]
- 7) What do we mean by data integrity? [1]
- 8) Some measures to support data integrity are the following. Explain them. [3]
- a) Verification
 - b) Validation
 - c) Data audits
- 9) Question about the Data Protection Act. [1]
- a) Explain the role of the Data Protection Commissioner. [1]
 - b) What do we mean by Data Controllers? [1]
 - c) Name two principles of data protection. [2]

- 10) Name two software-based measures and two hardware-based measures to combat piracy. [2]
- 11) What is the role of the Systems Analyst? [1]
- 12) One way in which a systems analyst can learn about the system under study is by means of interviews. Mention two other ways. [2]
- 13) What is the difference between off-the-shelf and tailor-made (or bespoke) software? [2]
- 14) Describe the following kinds of testing techniques.
 - a) Black box testing [1]
 - b) White box testing [1]
 - c) Beta testing [1]
- 15) One type of documentation is the requirements documentation. Mention and describe another two. [2]
- 16) Name and explain two features of debuggers. [2]
- 17) Name and explain two changeover methods (i.e. how to change from the old system to the new system). [2]
- 18) Name and explain two types of system maintenance. [2]