88077013

COMPUTER SCIENCE
STANDARD LEVEL
PAPER 1

Monday 12 November 2007 (afternoon)

1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

- Do not open this examination paper until instructed to do so.
- Section A: answer all the questions.
- Section B: answer all the questions.

SECTION A

*Answer **all** the questions*.

1. An organization has to determine the level of security required to prevent theft of valuable data. State **two** factors that should be considered in this determination. *[2 marks]*

2. Outline the application of CASE tools. *[2 marks]*

3. (a) Outline the principal characteristics of *online (interactive) processing*. *[2 marks]*

    (b) State **two** applications of online (interactive) processing. *[2 marks]*

4. Outline what is meant by *syntax errors*. *[2 marks]*

5. Outline **two** features of a *feasibility report*. *[4 marks]*

6. (a) Explain the function of *cache memory*. *[3 marks]*

    (b) Outline the need for *virtual memory*. *[3 marks]*

7. State **one** advantage and **one** disadvantage of *direct access*. *[2 marks]*

8. Discuss the advantages of *modularity* in designing a solution to problems. *[4 marks]*

9. Outline the function of an *interpreter*. *[2 marks]*

10. Outline the need for *data compression*. *[2 marks]*

SECTION B

*Answer **all** the questions.*

11. A business with around 60 employees is planning to introduce a Local Area Network (LAN).

(a) Describe both the hardware and the software needed for this organization to connect to the Internet and make use of e-mail facilities. *[4 marks]*

(b) State **two** advantages of the LAN to users. *[2 marks]*

(c) The business is considering introducing either a *star* or a *bus* network. Outline **one** advantage and **one** disadvantage of choosing the star. *[4 marks]*

12. A banking organization is considering setting up a network system.

    (a) Explain **two** security measures that should be adopted to prevent unauthorized access. *[4 marks]*

    (b) State **two** methods to ensure data integrity in the transmission of data. *[2 marks]*

    (c) Discuss **two** implications of a failure of network security. *[4 marks]*

12. A banking organization is considering setting up a network system.

13. A hotel reservation system is being developed using the *prototyping approach*.

    (a)   (i)   Compare *questionnaires* and *observation* as methods of *data collection*.   *[5 marks]*

            (ii)   State **one** other method of data collection.   *[1 mark]*

    (b)   Explain **two** advantages of prototyping.   *[4 marks]*

14. Consider the following Java method:

```java
private int daysInMonth (int  month)
{
   if((month == 4)||(month == 6)||(month == 9)||(month == 11))
   {
     return 30;
   }
   else if (month == 2)
   {
     return 28;
   }
   else
   {
     return 31;
   }
}
```

(a)   Explain the significance of the word *private* in the method heading.   *[2 marks]*

(b)   Describe the result of the following method call:
      int days = daysInMonth(7);   *[3 marks]*

(c)   Describe a situation in which a *logic error* could occur as a result of calling this
      method.   *[3 marks]*

The method daysInMonth(), which calculates the number of days in a given month,
can be called from other methods.

(d)   Suggest the purpose of one such method.   *[2 marks]*