

# ASSOCIATION OF COMPUTER PROFESSIONALS

CERTIFICATE EXAMINATION

SPECIMEN PAPER

## COMPUTER APPLICATIONS AND OPERATIONS

(TWO AND A HALF HOURS ALLOWED)

*You have ten minutes to read through this paper before the start of the examination.*

*Answer a total of FIVE questions.*

*Each question carries 20 marks.*

1. The work of programmers and operators has changed in recent years following the arrival of networking and the Internet.
  - a. Describe briefly SIX types of task that a programmer would do. [6 Marks]
  - b. Describe briefly SIX routine operator tasks. [6 Marks]
  - c. What new operating tasks would you expect to find in a modern computer system relating to:
    - (1) Networked operation (TWO tasks).
    - (2) Internet services (TWO tasks). [8 Marks]
  
2. Problems during program development can be caused by various types of error.
  - a. Explain, with examples, the meaning of syntax errors, logic errors and run-time errors. [6 Marks]
  - b. Explain how each of the above errors can be detected and then corrected. [6 Marks]
  - c. Suggest possible reasons for FOUR of the following problems:
    - (1) A program runs, but generates the wrong results.
    - (2) A source program cannot be compiled to an object program.
    - (3) A compiled program starts to run, but fails before completion.
    - (4) An interpreted program fails part way through.
    - (5) A program runs correctly; the user then changes the input data and the program fails on the next run.
    - (6) While copying a file (downloading) from the Internet, a program fails. [8 Marks]
  
3. With examples from a programming language you have used, distinguish between each of the following pairs of terms:
  - a. Constant and Variable.
  - b. Assignment Statement and Input Statement.
  - c. Arithmetic Operator and Relational Operator.
  - d. Numeric Type and String Type.
  - e. Remark and Declaration. [20 Marks]
  
4. Word processing packages provide facilities to control the page layout. With the aid of labelled diagrams, explain the following terms:
  - a. Centring.
  - b. Columns.
  - c. Footer.
  - d. Header.
  - e. Hyphenation.
  - f. Margins.
  - g. Proportional font.
  - h. Right justification.
  - i. Special effects.
  - j. Tabulation. [20 Marks]

5. The program below contains a subroutine and some loops.

```
10 PRINT "Subroutine and Loops"  
20 X = 1  
30 FOR I = 1 TO 2  
40     FOR J = 2 TO 5  
50         GOSUB 110  
60     NEXT J  
70 NEXT I  
80 PRINT X  
90 IF X <= 256 THEN 80  
100 END  
110 X = 2 * X  
120 RETURN
```

- a. Explain the terms Loop and Subroutine. [6 Marks]
- b. Using an effects table ('dry run'), show the action of the program from line 10 to line 80. [7 Marks]
- c. Explain the action of the statements:
  - (1) at line 90.
  - (2) at line 110. [4 Marks]
- d. Name the type of loop:
  - (1) in lines 30 to 70.
  - (2) in lines 80 to 90. [3 Marks]

6. Program and User Documentation form part of the overall documentation for a software project.

- a. List the main items of *program* documentation. [6 Marks]
- b. Describe the contents of documentation for the *users*. [6 Marks]
- c. Explain why program documentation is needed after the software has started live running. [4 Marks]
- d. Name other items of software documentation in the project not already included in a. and b. above. [4 Marks]

7. Distinguish between FIVE of the following operating system terms:

- a. Copy and Rename commands.
- b. Deletion and Defragmentation.
- c. Desktop and Icon.
- d. Disc Drive and Disc Partition.
- e. File and Folder.
- f. Path and Link (Hyperlink).
- g. Track and Sector. [20 Marks]

8. Computer security is an important matter, especially with the growing use of the Internet.

- a. Explain your understanding of the term Security as applied to computer systems. [4 Marks]
- b. Describe briefly FOUR (or more) ways of improving computer security. [12 Marks]
- c. What are the main security problems you foresee arising from the increased use of the Internet for e-mail and e-commerce? [4 Marks]