IN COLLABORATION WITH IVTB

Diploma in Information Technology

Cohort DIP/02/FT/BI – DIP/02/FT/SE

Resit Examinations for 2003 – 2004

Semester 2

MODULE: Software Engineering Management Principles

MODULE CODE: BISE100

Duration: 2 Hours

Instructions to Candidates:

1. Answer all questions
2. No books or any other materials are allowed.

This question paper contains 4 questions and 4 pages.
QUESTION 1: (25 MARKS)

A project has the following table of tasks, durations and dependencies:

<table>
<thead>
<tr>
<th>Task</th>
<th>Duration (days)</th>
<th>Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T2.</td>
<td>8</td>
<td>T1</td>
</tr>
<tr>
<td>T3.</td>
<td>6</td>
<td>T1</td>
</tr>
<tr>
<td>T4.</td>
<td>3</td>
<td>T1</td>
</tr>
<tr>
<td>T5.</td>
<td>9</td>
<td>T4</td>
</tr>
<tr>
<td>T6.</td>
<td>7</td>
<td>T2, T3</td>
</tr>
<tr>
<td>T7.</td>
<td>12</td>
<td>T5</td>
</tr>
<tr>
<td>T8.</td>
<td>4</td>
<td>T7</td>
</tr>
<tr>
<td>T9.</td>
<td>13</td>
<td>T6</td>
</tr>
<tr>
<td>T10.</td>
<td>5</td>
<td>T9</td>
</tr>
</tbody>
</table>

a) Draw an activity network diagram for this project. (5 marks)

b) What you understand by the term “critical path” for an activity network diagram? (2 marks)

c) What is the critical path for the above activity network diagram? (3 marks)

d) How is the critical path important in a project? (3 marks)

e) What is the duration of the given project? (2 marks)

f) After the project has started, there is a delay on Task T3 which takes 10 days instead of 6 days as mentioned above. What is the impact of this delay on the overall project duration. (3 marks)

g) Identify at least one risk in a software engineering project. (2 marks)

h) Describe the impact it may have on the project. (2 marks)

i) Explain what would you do to tackle this risk? (3 marks)
QUESTION 2: (25 MARKS)

For the following program in pseudo-code, attempt the following questions:

a. Draw the control graph. (10 marks)

b. Determine its cyclomatic complexity. (5 marks)

c. Give the list of basis paths. (5 marks)

d. For each basis path, describe the conditions that the parameters Video Club Database, MemberID and FilmID should fulfill. (e.g. MemberID and Database should be such that Member does not exist). (5 marks)

Program:

```
Function Rent Film (Database Video Club, String MemberID, String FilmID)

Search for Member in Database whose ID matches MemberID
If Member does not exist then
    { Print ("Error")
    Exit

Else if (member status = "Suspended") or (outstanding loans > 3) then
    { Print ("Error")
    Exit

Search for Film in Database whose ID matches FilmID
If (Film exists) and (film status = "available") then
    { Add loan record
    Update member and film records

else
    { Print ("Error")
    Exit

```
QUESTION 3: (25 MARKS)

a) Describe at least 5 desirable quality attributes of a software? (5 marks)

b) What is the difference between quality control and quality assurance? (3 marks)

c) Describe ONE technique used for quality control and ONE technique used for quality assurance. (2 marks)

d) What are the reasons for which the maintenance phase accounts for a large part of the cost of a software throughout its entire life. (5 marks)

e) How can Quality Assurance help reduce costs during the maintenance phase? (5 marks)

f) Briefly explain the different levels of the Capability Maturity Model. (5 marks)

QUESTION 4: (25 MARKS)

React to the following statements which are often made by IT Professionals. You are expected to make use of your knowledge to describe any facts which support the statement or give any explanation for any false myths and highlight the real problem.

a) As software will always contain bugs, it is a wastage of time and money to invest in software quality assurance. (5 x 5 marks)

b) The only way to guarantee good quality is to exhaustively test software.

c) Maintenance phase in the software development life cycle is not an important phase as it comes after the main contract has been signed and delivered.

d) The IT function is better delivered by external companies rather than by internal IT departments – all IT functions should thus be completely outsourced.

e) A CASE tool just provides tools to make pretty diagrams and does not help in the real design of software.

[TOTAL PAPER : 100 MARKS]

***END OF QUESTION PAPER***