B5.1-R4: SOFTWARE PROJECT MANAGEMENT

NOTE:
1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours Total Marks: 100

1. a) State the meaning and principles of software engineering.
b) Define process, product, project and quality.
c) State the various criteria for completeness in the WBS.
d) Justify – ‘Do it twice’.
e) Explain the meaning of project costing with an example.
f) State the major reasons of delay in a software project.
g) What do you mean by the term ‘Payback Analysis’? Why is it carried out?

(7x4)

2. a) Define the term ‘Software Project’. State the necessary requirements for any quality improvement process to be successful.
b) Explain the prototyping model with its advantages and disadvantages.
c) What is Project Management Plan? Why is it required?

(7+7+4)

3. a) Discuss the key risk factors involved in a software project.
b) Explain in brief about various activities involved in a software project.
c) What is WBS? How does it help in managing a large software project?

(6+6+6)

4. a) Discuss the role of algorithmic methods and automated estimation tools in software project economics.
b) Explain Earn Value Analysis Techniques for project monitoring.
c) What is Function-point? How does it help in cost estimation?

(8+6+4)

5. a) State the role of measures, metrics and indicators. Discuss various metrics related to process and product.
b) Explain five basic parameters which are mainly used as a function while estimating software cost.

(9+9)
6  
   a) Explain the use of PERT charts with an example.  
   b) Consider the following activities of a particular software project:

<table>
<thead>
<tr>
<th>Activity No.</th>
<th>Activity Name</th>
<th>Duration (days)</th>
<th>Immediate predecessor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SRS</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Database Design</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>System Design</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Detailed Design</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Coding</td>
<td>75</td>
<td>2, 4</td>
</tr>
<tr>
<td>6.</td>
<td>Testing</td>
<td>150</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>Implementation</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

   Do the following:  
   i) Draw activity network representation of the project.  
   ii) Find earliest start (ES) time, earliest finish (EF) time, latest start (LS) time, latest finish (LF) time and slack time (ST) for each activity.  
   Find the critical path.  
   c) Discuss the meaning of Defect and Defect Density with an example.  

7.  
   a) Define the terms risk and risk management. Explain various activities involved in risk management of a software project.  
   b) Discuss the issues involved in managing Web-based projects.  
   c) Consider a project with the following functional units along with complexity value:

<table>
<thead>
<tr>
<th>Functional Units</th>
<th>Value of Functional Unit</th>
<th>Weighting Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of user inputs</td>
<td>35</td>
<td>3</td>
</tr>
<tr>
<td>No. of user outputs</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>No. of user enquiries</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>No. of user files</td>
<td>04</td>
<td>12</td>
</tr>
<tr>
<td>No. of external interfaces</td>
<td>03</td>
<td>8</td>
</tr>
</tbody>
</table>

   Assume that the value of Complexity Adjustment Factor (CAF) is 1.00. Calculate the value of function point (FP) for the project.