FINAL EXAM
FIRST SEMESTER SESSION 2011/2012

COURSE CODE / NAME: STID3163 Kejuruteraan Perisian / Software Engineering
DATE: 2 January 2012 (Monday)
TIME: 8.30-11.00 PM
VENUE: DSB KOLEJ MAS

INSTRUCTION:
1. This book script contains FOURTEEN (14) questions printed on 10 pages excluding the cover page.
2. Answer ALL the questions in the spaces provided.

MATRIC NO: __________________________ (with word) __________________________ (with number)
IDENTIFICATION CARD NO: __________________________ ____________
LECTURER: __________________________
GROUP: ______ TABLE NO: ______

DO NOT OPEN THIS EXAMINATION PAPER UNTIL INSTRUCTED

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INSTRUCTION: STRUCTURED QUESTIONS (100 MARKS)

1. Provide **ONE (1)** difference between software engineering and system engineering.  
   (2 marks)

2. Planning process is one of generic process framework in software engineering. List **FOUR (4)** of principle in planning practices.  
   (4 marks)

3. There are several design models in design modeling practices. List **TWO (2)** of these design models.  
   (2 marks)
4. Prototyping approach is one of the approaches in software process model. Give THREE (3) advantages and THREE (3) disadvantages of this approach.  

(6 marks)

5. Explain THREE (3) of the principles underlying agile methods that lead to the accelerated development and deployment of software.  

(9 marks)
6. Construct **TWO (2)** circumstances where you might recommend against software reuse.  

(4 marks)

7. Three are three types of component composition which are sequential, hierarchical and additive. Choose any **TWO (2)** of these component compositions, illustrate and explain how adaptors are applied in composing of the component.  

(6 marks)
8. Using an example of a component that implements an abstract data type such as a stack, show why it is usually necessary to extend and adapt components for reuse by answering the following questions:

a) What are **FOUR (4)** operations in stack that can be reused? (4 marks)

b) Demonstrate how stack component can be reused in different systems? Explain your answer by providing examples of its operation. *(Hint: choose any suitable system that uses stack operations)* (6 marks)
9. Why is there a general need for maintain software? Explain TWO (2) types of maintenance usually performed on software?

(6 marks)

10. Explain the steps you would take to reverse engineer an inventory system with the help of a diagram.

(8 marks)
11. You have been asked to test a method called ‘catWhiteSpace’ which replaces sequences of blank characters with a single blank character. Identify testing partitions and derive a set of tests for this method.

**Testing partitions are:**

- a) Strings with only single blank characters
- b) Strings with sequences of blank characters in the middle of the string
- c) Strings with sequences of blank characters at the beginning/end of string

Based on the above testing partitions, construct **THREE (3)** possible test cases. An example is shown below. (Hint: please represent a single blank with "-". Use the same sentences provided in the example below when creating your own test cases)

*The quick brown fox jumped over the lazy dog (Test partition (a))*

(6 marks)
12. What is the CMMI model and what are TWO (2) of the process areas that it has? Provide elaboration of the selected process areas. (8 marks)
13. Iteration can be applied to incremental delivery and spiral development process model. Compare **TWO (2)** ways on how these two process models apply iteration in each development cycle.

(8 marks)
14. Based on the following activities table:

<table>
<thead>
<tr>
<th>Task</th>
<th>Duration (days)</th>
<th>Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>15</td>
<td>T1 (M1)</td>
</tr>
<tr>
<td>T3</td>
<td>10</td>
<td>T1, T2 (M2)</td>
</tr>
<tr>
<td>T4</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>15</td>
<td>T3, T4 (M3)</td>
</tr>
<tr>
<td>T7</td>
<td>20</td>
<td>T3 (M4)</td>
</tr>
<tr>
<td>T8</td>
<td>35</td>
<td>T7 (M5)</td>
</tr>
<tr>
<td>T9</td>
<td>15</td>
<td>T6 (M6)</td>
</tr>
<tr>
<td>T10</td>
<td>15</td>
<td>T5, T9 (M7)</td>
</tr>
</tbody>
</table>

(a) Draw an activity network.

(11 marks)
b) List and calculate the duration for all paths. 

(6 marks)

c) Identify the critical path. 

(2 marks)

d) How long that T10 can be delayed without affecting the completion duration of the project.

(2 marks)

END OF QUESTION