## SOFTWARE ENGINEERING & WEB TECHNOLOGY

YEAR 2011 ONE MARK

Q. 1 A company needs to develop digital signal processing software for one of its newest inventions. The software is expected to have 40000 lines of code. The company needs to determine the effort in person-months needed to develop this software using the basic COCOMO model. The multiplicative factor for this model is given as 2.8 for the software development on embedded systems, while the exponentiation factor is given as 1.20. Which is the estimated effort in person months?

(A) 234.25 (B) 932.50

(C) 287.80 (D) 122.40

Q. 2 A company needs to develop a strategy for software product development for which it has a choice of two programming languages L1 and L2. The number of Lines of Code (LOC) developed using L2 is estimated to be twice the LOC developed with L1. The product will have to be maintained for five years. Various parameters for the company are given in the table below.

| Parameter | Languagey L1 | Language L2 |
|---|---|---|
| Man years needed for development | LOC/ 10000 | LOC/ 10000 |
| Development Cost per man year | 1000000 | 750000 |
| Maintenance time | 5 years | 5 years |
| Cost of maintenance per year | 100000 | 50000 |

Total cost of the project includes cost of development and maintenance. What is the LOC for L1 for which the cost of the project using L1 is equal to the cost of the project using L2?

(A) 4000 (B) 5000

(C) 4333 (D) 4667

Q. 3 HTML (Hyper Text Markup Language) has language elements which permit certain actions other than describing the structure actions other than describing the structure of the web document. Which one of the following actions is NOT supported by pure HTML (without any server or client side scripting) page?

(A) Embed web objects from different sites into the same page

(B) Refresh the page automatically after a specified interval

(C) Automatically redirect to another page upon download

(D) Display the client time as part of the page

Q. 4 Which one of the following is NOT desired in a good Software Requirement Specifications (SRS) document?

(A) Functional Requirements

(B) Non-Functional Requirements

(C) Goals of Implementation

(D) Algorithms for Software Implementation

YEAR 2011 TWO MARKS

Q. 5 Which of the given options provides the increasing order of asymptotic complexity of functions $f_1, f_2, f_3$ and $f_4$?

$$f_1(n) = 2^n$$
$$f_2(n) = n^{3/2}$$
$$f_3(n) = n \log_2 n$$

(A) $f_3, f_2, f_4, f_1$ (B) $f_3, f_2, f_1, f_4$

(C) $f_2, f_3, f_1, f_4$ (D) $f_2, f_3, f_4, f_1$

Q. 6 The following is the comment written for a C function.

```
* This function computes the roots of a quadratic equation
a.x^2+b.x+c=0.
The function stores two real roots in *root1 and *root2
and returns the status of validity of roots. It handles
four different kinds of cases.
(i) When coefficient a is zero irrespective of
discriminant.
(ii) When discriminant is positive.
(iii) When discriminant is zero.
(iv) When discriminant is negative.
Only is case (ii) and (iii), the stored roots are valie.
Otherwise 0 is stored in the roots.
The function returns 0 when the roots are valied and -
otherwise.
The function also ensures root1 >= root2.
int get_QuadRoots (float a, float b, float c, float *root1,
float *root2);
```

A software test engineer is assigned the job of doing black box testing. He comes up with the following test cases, many of which are redundant.

| Test Case | Input Set | | | Expected Output Set | | |
|---|---|---|---|---|---|---|
| | a | b | c | root1 | root2 | Return Value |
| 11 | 0.0 | 0.0 | 7.0 | 0.0 | 0.0 | – 1 |
| 12 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | – 1 |
| 13 | 1.0 | 2.0 | 1.0 | – 1.0 | – 1.0 | 0 |
| 14 | 4.0 | – 12.0 | 9.0 | 1.5 | 1.5 | 0 |
| 15 | 1.0 | – 2.0 | – 3.0 | 3.0 | – 1.0 | 0 |
| 16 | 1.0 | 1.0 | 4.0 | 0.0 | 0.0 | – 1 |

Which one of the following options provide the set of non-redundant tests using equivalence class partitioning approach from input perspective for black box testing?

(A) T1, T2, T3, T6
(B) T1, T3, T4, T5
(C) T2, T4, T5, T6
(D) T2, T3, T4, T5

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ANSWER KEY

| Software Engineering & Web Technology | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| (A) | (B) | (D) | (D) | (C) | (C) | | | | |