Time: 25 min	CSE 3105	CT1	Marks:20

1. Define software. What are the characteristics of a software? [4]
2. Briefly explain the support phase of software engineering. [4]
3. Write down the principles in agile. [6]
4. Write down two advantages and two disadvantages of - test driven development and feature driven development. [2+2=4]
5. Provide two examples of following categories of software [2]

    i. Real time software   iii. Artificial Intelligence software

    ii. Engineering and scientific   iv. System software
         software

CSE 3105 (Software Engineering)   Class Test   Full Marks - 20   Time - 25 mins

N.B.: No extra page will be supplied. So, answer accordingly.

1. What is validation and verification?   2
2. Suppose you're working on a project named "RUET CSE Automation". In your project you need to implement the following features-   2+6

    I.   Notice board: it should be made online so that the notices of the Dept. of CSE can be found online.

    II.   Result: results should be available online for each student. A student can view only his results. A teacher should be able to update the results.

  Now,

    A. Is there any need of testing the software project? Write 3 points to support your answer.

    B. What types of test can be done on this project? Discuss with examples related to the given scenario.

3. Discuss the following terms briefly:

    i) Unit testing   ii) Integration testing   10

1. Briefly describe the 4P's associated with project management — 6
2. What are the elements involved in risk item checklist. — 6
3. Briefly explain the project coordination techniques. — 6
4. Write any four sign that indicates an information systems project is in jeopardy — 2

CT - 4	CSE 3105	Marks - 20	Time - 25 mins

1. What is black box testing and white box testing? - 2

2. What are the principles one should follow during the steps of testing. - 5

3. Use flow graph to compute the independent paths of the following code. Also write a test case (Expected input and output) for each path. - 8

```
1  bool IsGadha(int RUETianID, float cgpa, int SolveCount)
   {
2     bool retValue = false;
3     if( (RUETianID / 1000 )%10 != 3)
      {
10       cout<<"Can\'t be a gadha";
      }
4     if(cgpa < 3.00 || SolveCount < 50)
      {
5        if(cgpa<2.7 && SolveCount < 15)
10          cout<<"Boro Gadha"<<endl;
6        else if( cgpa < 2.7 && SolveCount > 250)
11          cout<<"Choto gadha"<<endl;
7        else if(cgpa > 3.5 && SolveCount < 15)
12          cout<<"Murkho gadha"<<endl;
8        retValue = true;

      }
9     return retValue;
   }
```

160 3013
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4. What is equivalence partitioning? How can you define equivalence classes? - 5

Honour's Light Is Our Guide
RAJSHAHI UNIVERSITY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
3rd Year Odd Semester Examination 2019
COURSE NO: CSE 3105   COURSE TITLE: Software Engineering
FULL MARKS: 72   TIME: 3 HRS

N.B.   (i) Answer any SIX questions taking any THREE from each section.
       (ii) Figures in the right margin indicate full marks.   42/48
       (iii) Use separate answer script for each section.

Marks

SECTION : A   24/26

1. (a) Define software. Write down the characteristics of software. — 4
   (b) What types of changes are encountered during the support phase of software — 4
       engineering? Explain briefly.
   (c) Suppose for share market software, the line of code is 85,000 and the effort in — 4
       person month is 12. Then find out the duration in months for developing this
       software using software equation.   0.39

2. (a) Consider that you have the responsibility to choose the software process model of a — 4   4/4
       software team. The team must deliver a product within 30-90 days. Which model(s)
       are you going to choose and why? What are the advantages and disadvantages of the
       model?
   (b) Define test driven development and feature driven development. Write down two — 4   3/4
       advantages and disadvantages of both.   9/12
   (c) Distinguish between the following terms-   — 4   2/4
       (i)   Customer and end user.
       (ii)   Software engineering and System engineering.

3. (a) What is cost of quality? Write down and explain various cost of quality. — 4
   (b) Consider the following information where the weighting factors of a particular — 4   4/4
       measurement is marked by underline.

Measurement parameters	Count	Weight factor		
		Simple	Average	Complex
Number of inputs	26	03	05	07
Number of outputs	30	04	06	08
Number of inquiries	14	04	05	06
Number of files	08	04	07	10
Number of external files	06	03	07	11

And consider the associated factors with the following values.

Factors	Value
Backup & Recovery	03
Data communication	05
Distributed processing functions	04
Online data entry	05
Critical performance	04

7/8

$$P = \frac{FP}{PM}$$

Now estimate the FP for this project. If productivity is 30 FP/person-month, number
of defects is 35 and pages of documentation is 438 then find out the required time
to complete the project (in month), quality and documentation metrics of this
project.
   (c) Write down the possible steps that can be taken to mitigate high staff turnover in a — 4   3/4
       software project.

4. (a) Consider development of a library management software where the number of — 4   4/4
       module and line of code estimation for each module is given below-   8/8

Module no	Name	Optimistic LOC estimation	Pessimistic LOC estimation	Most likely LOC estimation
1	User interface	2400	3800	3100
2	Database management	3000	3900	3400
3	Report generation	1800	2800	2300

Now, you want to complete the software development with 5 person-month at a cost of $1000 per month. Evaluate total estimated LOC along with required productivity and cost per LOC.

(b) What is reusable software resource? Explain different types of reusable software resources.   4   4/4

(c) What is software scope? State and explain the questions that are used to determine the scope of a software.   4

SECTION : B

18/20

Q.5   (a) How can you tell if a software is testable or not?   5
      (b) What is black box testing and white box testing?   3   3/3
      (c) Draw the flow graph notation for the following statements,   4   4/4
          (i)   If
          (ii) while
          (iii) do...while
          (iv) switch

8/9

Q.6. (a) A software is not a product that is built overnight. Some issues should be considered to implement a software successfully. What are those issues and how they impact development of software?   4

      (b) What is debugging? Discuss different type of debugging approaches.   4

      (c) What is equivalence partitioning? How can you define equivalence classes?   4

Q.7   (a) What is software quality? Briefly explain from different views.   4

      (b) Briefly explain the following testing strategies-   4   3/4
          (i)   Smoke testing
          (ii) Regression testing.

7/8

      (c) A software development company "RUET CSE IT LTD", gets the contract to implement a software that automates the account section of RUET. After the successful implementation the company thinks of testing the software. What testing strategies should they consider and why?   4   4/4

Q.8   (a) What is pascal case and camel case?   3

      (b) What is system? Discuss the system engineering hierarchy.   3

3/3

      (c) Suppose, you are implementing a software using the spiral model for software processing. The different phase requires different testing strategy. Which testing strategy should be used in different steps? Briefly explain to justify your answer.   3   3/3

      (d) What are the restraining factors that an engineer should consider while designing a system?   3

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