**NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA-769008**
**END-SEMESTER EXAMINATION, 2019**
**SESSION: 2018 – 2019 (Spring)**
M.Tech.2nd Semester

**Subject code:** CS6404 **Subject Name:** Software Testing **Dept. Code:** CS
**No. of pages:** 2 **Full Marks:** 100 **Duration:** 3hrs

**Figures at the right hand margin indicate marks.**
**All parts of a question should be answered at one place.**
**Answer any FIVE questions including Q. 1.**

| Q. No. | Particulars | Marks |
|---|---|---|
| 1. | | 2x10=20 |
| (a) | What do you mean by concolic testing? Give an example of concolic tester. | |
| (b) | Which testing technique takes into account the possible combinations of input conditions, while generating test cases? | |
| (c) | What do you understand by operational profile? Give one of it's uses. | |
| (d) | For cluster level testing, which UML 2.x diagram is most suitable? | |
| (e) | What do you mean by smoke testing? Briefly explain through an example. | |
| (f) | Which is a stronger testing – data flow testing or path testing? Give the reason behind your answer. | |
| (g) | What is the implication of encapsulation in satisfactory testing of object-oriented software? | |
| (h) | What do you mean by Denial of Service? How you can test it? | |
| (i) | What is the difference between Product backlog and Sprint backlog? | |
| (j) | What do you understand by android emulator? What is its role in testing of android apps? | |
| 2. | | |
| (a) | A shop has three commodities to sell and has three types of customers. Discount is given as per the following procedure:<br>(i) For government orders, 10% discount is given irrespective of the value of the order.<br>(ii) For orders of more than Rs 50,000, agents get a discount of 15% and the retailer gets a discount of 10%.<br>(iii) For orders of Rs 20,000 or more and up to Rs 50,000, agents get 12% and the retailer gets 8% discount.<br>(iv) For orders of less than Rs 20,000, agents get 8% and the retailer gets 5% discount.<br>The above rules do not apply to the furniture items wherein a flat rate of 10% discount is admissible to all customers irrespective of the value of the order.<br><br>Design test cases for this system using decision table testing. | 10 |
| (b) | Write a C program for performing addition, subtraction, multiplication, and division of two numbers. Perform static data flow analysis by finding out the *define-use-kill p*atterns for all the variables present in the program. | 10 |


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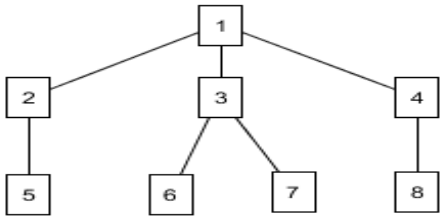
| 3.<br>(a) | Perform top-down and bottom-up integration procedures from the following system hierarchy.<br>  <br><br>Calculate the number of test sessions. | 10 |
| (b) | What do you mean by system testing? Briefly explain the different types of system testing that should be performed for a Banking Information System (BIS). You may assume your own functional and non-functional requirements. | 10 |
| 4<br>(a) | With suitable examples, discuss the role of test log, test incident report and test summary report in validation testing. | 10 |
| (b) | What do you mean by dynamic slice? With a suitable example, briefly explain, how dynamic slices can be used for test case prioritization? | 10 |
| 5<br>(a) | What are the major challenges in Object-Oriented software testing? Explain them with suitable examples. | 12 |
| (b) | What do you understand by random class testing? Briefly explain the steps of random class testing. Generate test cases for the *DebitCard* class using random class testing. You may assume your own operations for the *DebitCard* class. | 8 |
| 6<br>(a) | What are the possible types of vulnerabilities/threats in a web based system? How they can be managed, in security testing? | 10 |
| (b) | With a suitable diagram, briefly discuss agile testing life cycle. Write down some of the challenges of agile testing. | 10 |
| 7<br>(a) | Briefly discuss the different types of tests that should be performed for android applications. | 10 |
| (b) | What do you mean by 'COTS'? Briefly discuss the elements that should be involved in 'COTS' test plan. | 10 |