

VII SEMESTER B. TECH (COMPUTER SCIENECE AND ENGINEERING) END SEMESTER EXAMINATION, 22-DEC-2021 (PART B)

SUBJECT: SOFTWARE TESTING AND ANALYSIS (CSE 4076)

REVISED CREDIT SYSTEM

Time: 85 Minutes (75 (Write up) +10 (Upload)) (2.20 PM-3.45 PM)

MAX. MARKS: 20

Note: Answer ALL the questions.

- Students have to write the answers in their own handwriting on a white sheet of paper. Scanned handwritten answer paper has to be uploaded as single pdf file. Answer sheet should not be mailed or uploaded in chat.
- The following details should be mandatorily written in the answer paper: Name, Semester, Section, Roll No., Registered No., Subject name, and Signature with date.

1A	Consider the following program P in Fig. 4B. and four mutants	
	1. main(argc, argv)	
	2. int argc, r, i;	
	3. char *argv[];	
	4. $\{ r = 1; \}$	
	5. for $i = 2$ to 3 do	
	6. if $(atoi(argv[i]) > atoi(argv[r]))$ $r = i;$	
	7. printf("Value of the rank is $%d n$ ", r);	
	8. $exit(0); \}$	
	Fig. 4B.	
	M1: Change line 5 to for $i = 1$ to 3 do	
	M2: Change line 6 to if $(i > atoi(argv[r]))$ r = i;	
	M3: Change line 6 to if $(atoi(argv[i]) \ge atoi(argv[r]))$ r = i;	
	M4: Change line 6 to if $(atoi(argv[r]) > atoi(argv[r]))$ $r = i;$	
	Design minimum number test cases to achieve 100% adequacy w.r.t. mutation testing. With a neat	7 3 6
	table, show the output of P and mutants for each test case.	SМ
1B	Identify basic blocks and hence draw control flow graph for the following code.	
	a := read();	
	b := read();	
	c := read();	
	if $(a < 10)$ (
	d := c + 8;	
	write (c); Lelse if $(a \le 20)$ (
	e := 10;	
	d := e + a;	
	write(e);	
	f := 12;	
	d := f + a;	
	write(f);	
	write(d);	2M
1C	Suppose test suite A satisfies adequacy criteria C1. Test suite B satisfies adequacy criteria C2,	
	and C2 subsumes C1. Can we be certain that faults revealed by A will also be revealed by B?	31/
	Explain	JIVI

2A	Consider a program for the determination of division of a student based on the marks in three	
	subjects. Its input is a triple of positive integers (say mark1, mark2, and mark3) and values are	3M
	from interval [0, 100]. The division is calculated according to the following rules:	
	Marks Obtained Division (Average)	
	75 – 100 First Division with distinction	
	60 – 74 First division 50 – 59 Second division	
	40 – 49 Third division	
	0 – 39 Fail	
	Total marks obtained are the average of marks obtained in the three subject's i.e. $Average = (mark_1 + mark_2 + mark_3) / 3$	
	The program output may have one of the following words: [Fail Third Division Second	
	Division First Division First Division with Distinction Design robust RVA test ages for the	
	Division, Flist Division, Flist Division with Distinction]. Design robust BVA test cases for the	
	given problem. Also identify the equivalence class test cases for output domains and design the	
2 D	test cases based on the classes identified.	
2B	An airline offers only flights to India and Asia. Under special conditions, a discount is offered on	
	the normal airfare:	
	 Passengers older than 18 with destinations in India are offered a discount of 20%, as long as the departure is not on a Monday or Friday. 	
	• For destinations outside of India, passengers are offered a discount of 25%, if the	
	departure is not on a Monday or Friday.	
	• Passengers who stay at least 6 days at their destination receive an additional discount of	
	• Passengers older than 2 but younger than 18 years are offered a discount of 40% for all	
	destinations.	
	• Children 2 and under travel for free.	
	i. Identify the condition variables and actions involved.	
	ii. Design a Decision table by clearly showing the initial and reduced table after applying	
	DUN'T CAKE conditions.	5M
• ~	111 Write the Decision I able based test cases for the given problem	
2C	Considering the scenario of Library Management Software, explain the need of stubs and drivers	2M
	In Software Testing. Also, show the skeletal code for the example.	