1. Which of the following answers represents the simplest reduction of the following expression a’bc + ab’c’ + abc + ab’c + abc'

a) a'c + b

b) a + a'bc

c) bc + a

d) abc' + ab'c + ac + a'bc

2. Which of the following answers represents the simplest reduction of the following expression a'bc'd' + a’bc + ab’c’ + abc + ab’c + abc' + a'bc'd

a)b + a

b)ac' + bc + c'b + ca

c)a + b'

d)a + bc

3. A method has three input parameters that have 5, 4, and 3 values respectively. How many tests are eliminated by performing pair-wise testing over all possible combinations?

a) 20

b) 24

c) 40

d) 60

4. How many boundary values are required to test the following condition “(if a>25)…”

1. two.
2. two or three depending upon the required approach.
3. three.
4. four.

5. Which of the following answers represents the simplest reduction of the following expression a'bc + abc + ab’c’ + ab’c + abc'

a)b + a

b)ac' + bc + c'b + ca

c)a + b'

d)a + bc

6. Using Orthogonal Array Testing (or OATS) for pair testing is different from all-pairs testing in which of the following ways?

a) OATS pair testing will always produce more combinatorial tests.

b) All-pairs will always produce more combinatorial tests.

c) They are both methods of pair-wise testing and produce the same set.

d) They are both methods of pair-wise testing but may produce different sets.

7. A canonical sequence is best defined by which of the following?

a) null or illegal sequences.

b) sequences that are not equivalent to any previous sequence.

c) null or illegal sequences that have equivalences.

d) sequences that are equivalent to previous sequences.

8. A sequence enumeration is considered complete when which of the following occurs?

1. when all canonical sequences have been mapped to a new state
2. when all equivalent sequences have been mapped to a state
3. when no new sequences carry forward
4. all enumeration sequences result in the same response

9. Use case testing is best accomplished through which of the following?

1. generating test scenarios from the expanded use cases, identifying test cases, and generating test data.
2. developing operational profiles of specifications and testing them.
3. ensuring that use cases have both valid and invalid data considerations.
4. developing tests to the use cases only without use of functional requirements.

10. Multi-modal combinatorial testing deals which ONE of the following?

a) It looks at software state/mode usages - it is similar to state diagram testing.

b) It looks at the interaction of more than two combinations of data/elements.

c) It looks at the interaction of enumeration sequences of multiple order - trying to detect the remaining defects in the software.

d) It is the only kind of testing to fully address all discovered latent defects.

11. What is one of the weaknesses with the traditional approach to Use Case testing?

a. It does not consider invalid data in test case design.

b. It does not allow the use any of the other specification based techniques when designing test cases.

c. It does not address using the requirements in test case design.

d. Tool support is very limited for this testing, which means manual testing only.

12. A method has three input parameters that have 5, 4, and 3 values respectively. How many tests are required by for pair-wise testing?

a) 20

b) 30

c) 40

d) 60

13. Which one of the following tests pairs, stated as 3-tuples for abc, correctly test Condition coverage for the logical expression

(a || b) && c?

a) TFT,FTT

b) FTT,TFF

c) TFF,FTF

d) FFT,TTF

14. Which one of the following tests pairs, stated as 3-tuples for abc, correctly test Decision coverage for the logical expression

(a || b) && c?

a) FTT,TFT

b) FTT,TFF

c) TFF,FTF

d) FFF,FTT

15. Which one of the following tests pairs, stated as 3-tuples for abc, does **NOT** correctly test Condition/Decision coverage for the logical expression (a || b) && c?

a) TFT,FTF

b) FFF,TTT

c) FFT,TTF

d) FTT,TFF

16. For the following logical expression a | b | c, which of the following test cases provides complete MCDC coverage?

a) TTT,FTT,TFT,TTF.

b) FFF,TFF,FTF,TFT.

c) TTT,TFF,FTF,FFT.

d) FFF,FFT,TFF,FTF.

17. For the reduction of the expression a'bc + abc + ab’c’ + ab’c + abc', which best describes the number of test cases required for MC/DC testing of the reduced expression?

a)3

b)4

c)5

d)9

18. How many extra test cases are required for MC/DC coverage over decision coverage for an expression containing n conditions?

a)n-2

b)n-1

c)n

d)n+1

19. For the following logical expression a & b & c, which of the following test cases provides complete MCDC coverage?

a) TTT,TFF,FTF,FFT.

b) FFF,TFF,FTF,FFT.

c) TTT,FTT,TFT,TTF.

d) FFF,TFF,FTT,FFT.

~~20. Which of the following is NOT a reason to use a requirements management tool?~~

1. ~~to control and manage changes to the requirements.~~
2. ~~to communicate and review requirements changes.~~
3. ~~to assess and understand the source of requirements changes.~~
4. ~~to model and analyze the requirements.~~

21. What percentage of all possible test cases does MC/DC coverage of the following expression require a && b && c && d?

1. 25 %
2. 15 %
3. 10 %
4. 31.25 %

22. The three forms of MC/DC are which ONE of the following?

a) Universal Cause, Masking, and UC/M

b) Unique Cause, Masking, and UC/M

c) United Cause, Missing, and UC/M

d) United Cause, Masking, and UC/M

23. Why did we study MC/DC in class - which ONE of the following provides the best reason?

a) it is used in aerospace, automotive, and medical applications.

b) it is capable of detecting the most faults in logical expressions.

c) it is the highest level of detection available in commercially available software tools.

d) it is used in security critical applications.

24. Which of the following MCDC approaches allows only one condition to change at a time?

a) UC

b) M

c) RORG

d) Minimal MUMCUT

25. Why did we study single fault types in class - which ONE of the following provides the best reason?

a) it is used in aerospace, automotive, and medical applications and represents the highest quality coverage possible.

b) it represents the types of mistakes that most programmers make.

c) it allows us to assess the defect detection rates of various coverage techniques.

d) it is used in security critical applications to characterize hackers and their hacks.

Additional topics: know the logical identities on slide 38 of M06

Additional topics

1) I will give you a machine with inputs/outputs and a series of sequences. You will need to figure out the correct responses

2) I will give you a logical expression and you will need to determine what the TOF and TNF faults are (like problem 4 part 2 of HW 2).

3) A few problems like Problem 5 part 1 HW 2

4) A few UC MC/DC and M MC/DC problems (like problem 6)

5) I will give you some more complex terms that you need to reduce to IDNF first then do C/D, C, D, and MC/DC coverage of. Examples:

1. (a'b XOR ab) + a'b'c = a'c + b
2. (ab' + ac)' = a' + bc'