50. A control flow graph has nodes a, b, c .... i, and j. Its edges are (a,b),(a,c), (a,d), (b,d), (b,e), (c,d), (c,f), (c,g), (d,h), (e,g), (e,h), (f,g), (f,j), (g,i), (h,i), (i,j).

    a)   What is the number of regions ?   2

    b)   Calculate the cyclomatic number?   3

BACHELOR OF COMPUTER SCIENCE ENGINEERING EXAMINATION, 2011

(2nd Year, 2nd Semester)

SOFTWARE ENGINEERING

Time : Three Hours   Full Marks - 100

Group - A

Match the correct pairs :   15x2=30

Set - I		Set - II	
1.	Availability	i)	Risk table
2.	Backward pass	ii)	Average amount of time between failures
3.	Basic Unix commands such as grep, cat	iii)	Baseline budget
4.	BCWP	iv)	Boehm
5.	BCWS	v)	Bottom up parsing
6.	COCOMO	vi)	Conformance to requirements
7.	Cutoff Line	vii)	Defensive
8.	Design by contract	viii)	Earliest date
9.	Forward Pass	ix)	Earned value
10.	Interdependency	x)	Hard to understand
11.	No test drivers	xi)	Latest date
12.	No test stubs	xii)	Project scheduling

[**Turn over**

Set - I	Set - II
13. Quality	xiii) Reusable components
14. Reliability	xiv) Amount of time that a surver is running
15. Tightly coupled	xv) Top-down parsing

Group - B

Answer any **15**

Fill in the blanks :   15x2=30

16. All tests should be traceable to ____ ____.

17. Testing is a process of ____ a program with the intent of finding an ____.

18. ____ ____ is a testing trchnique that minimizes the number of test cases.

19. ____ ____ detects faults that have not been detected during unit testing by focusing on small groups of components.

20. Big bang testing is inconvenient because in this method it is impossible to distinguish failures in the ____ from failures within a ____.

21. Functional testing finds differences between the ____ ____ model and the observedsystem behaviour.

Z		Probability of meeting due date
1.4	—	0.919
1.2	—	0.885
1.0	—	0.841
0.8	—	0.788
0.6	—	0.726
0.4	—	0.655
0.2	—	0.579
0.0	—	0.500
– 0.2	—	0.421
– 0.4	—	0.345
– 0.6	—	0.274
– 0.8	—	0.212
– 1.0	—	0.159
– 1.2	—	0.115
– 1.4	—	0.081

a) Draw an activity - on - arrow network.   4

b) Find the expected duration and variance for each activity. 5

c) What is the probability that the project will be completed at least 3 weeks earlier than expected?   3

d) If the project due to date is 18 weeks what is the probability of not meeting the due date?   3

[Turn over

32. Frameworks also usually have _____ : these are like , except that they represent functionality that is optional for the developers to provide when they exploit the framework.

33. Modules that update a database or create a new file are not _____ _____ since they have side-effect in the database or file system respectively.

34. Anticipation of _____ is a special case of design for _____.

35. A utility is a procedure or class that has wide applicability to many different _____ and is designed to be _____.   15x2=30

Group - C

Answer any **10**

Choose the unique correct answer :

36. Testing

    a) shows the absence of errors

    b) shows that errors are present

    c) is useless because software invariably contains bugs

    d) all of the above.

37. The maximum "the less there is to test, the more quickly we can test it" is related to

a) interoperability

b) maintainability

c) portability

d) flexibility

45. If the requirements can be defined early in the cycle then an appropriate process model is

    a) prototype

    b) RAD

    c) spiral

    d) none of the above.

46. If the majority of team members are new to the problem domain for the project then an appropriate process model is

    a) prototype

    b) waterfall

    c) RAD

    d) incremental

47. If an environmental factor has a moderate effect, the corresponding value adjustment factor is

    a) 0

    b) 1

    c) 2

    d) 3

c) Layer, Procedural, Communicational.

d) Layer, Communicational, Procedural.

41. Increasing abstraction

a) decreases reusability.

b) increases reusability.

c) does not change reusability.

d) none of the above.

42. According to Mc Call's terminology, "Usability is a

a) product revision quality

b) product transition quality

c) product operation quality

d) all of the above.

43. According to McCall's terminology, " reusability " is a

a) product revision quality

b) product transition quality

c) product operation quality

d) all of the above.

44. The software quality criteria of modularity self descriptiveness, machine independence and software system independence are associated with

a) stability

b) observability

c) understandability

d) simplicity

38. During performance testing, we test whether the system can respond to many simultaneous requests. This is called

a) Stress testing

b) Volumn testing

c) Recovery testing

d) none of the above.

39. A design principle dictates that facilities for operating on the same data should be kept together. This is called

a) Communicational cohesion.

b) Utility cohesion.

c) Procedural cohesion.

d) Layer cohesion.

40. The following sequence of cohesion types is arranged in descending order of precedence:

a) Procedural, Communicational, Layer.

b) Communicational, Procedural, Layer.

48. Cost variance is the difference between

    a)   ACWP and BCWP

    b)   ACWP and BCWS

    c)   BCWS and BCWP

    d)   None of the above   10x2=20

Group - D

Answer **ALL** questions :

49. A project consists of the following activities :

Activity		Estimated duration (weeks)		
Beginning node	**Ending node**	**Optimistic**	**Most likely**	**Pessimistic**
1	2	1	1	7
1	3	1	4	7
1	4	2	2	8
2	5	1	1	1
3	5	2	5	14
4	6	2	5	8
5	6	3	6	15

a portion of the standard normal table is given below :

22. For number crunching programs that may take hours or for servers that continually respond to client requests, it is a good idea to specify _____, in terms of computations or _____ per minutes.

23. A system is a logical entity, having a set of definable _____ or _____, and consisting of hardware, software or both.

24. A subsystem is a system that is part of a _____ system and which has a definite _____.

25. The incremental model applies _____ sequences in a _____ fashion as calendar time progresses.

26. A use case model captures services offered by a system and users of the system in terms of _____, use cases, and the _____ relationship.

27. _____ _____ is the first phase in design activity based on UML.

28. In UML -modelling, interactions among subsystems can be determined from _____ _____.

29. In a proactive strategy for risk management, potential risks are identified, their _____ and _____ are assessed and they are ranked by importance.

30. The critical path is the path joining all nodes with a _____ _____.

31. The keything that distinguishes a framework from other kinds of software subsystem is that a framework is _____ _____.