BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER : V**
BRANCH: IT **SESSION : MO/18**

SUBJECT: IT5023 SOFTWARE ENGINEERING PRINCPLES

TIME: 3.00 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Identify two advantages and disadvantages of extreme programming. [2]
Q.1(b) Outline the features of Rational Unified process model. Give two reasons why it called a hybrid model. [4]
Q.1(c) Use an example to distinguish the process activities in a Boehm's spiral model from a waterfall model. Draw suitable diagrams. [6]

Q.2(a) With an example distinguish between a deliverable and a milestone. What do they signify? [2]
Q.2(b) For the given table draw a network diagram to illustrate the earliest and latest finish times of the project. Find the critical path and the time to complete the project. [4]

ACTIVITY	Predecessors	Duration(Weeks)
A	–	2
B	A	4
C	B	10
D	C	6
E	C	4
F	E	5
G	D	7
H	E,G	9
I	C	7
J	F,I	8
K	J	4
L	J	5
M	H	2
N	K,L	6

Q.2(c) Classify risks in a software project. Give two examples of risk in each category. Briefly explain the risk management process. [6]

Q.3(a) Enlist the methods of writing a requirements document. [2]
Q.3(b) Design use case model for an online shopping system. [4]
Q.3(c) For an online shopping website, what would be the requirements elicitation and analysis process? Explain why would a scenario based requirements discovery be better than interviewing the stakeholders. [6]

Q.4(a) Explain the concept of functional independence and modularity in design. [2]
Q.4(b) Enumerate the types of design classes. Explain the pipe and filter architecture using an example. [4]
Q.4(c) Draw a state chart diagram for a washing machine. [6]

Q.5(a) Explain the terms security testing, performance testing. [2]
Q.5(b) Consider a program for the determination of the nature of roots of aquadratic equation. Its input is a triple of positive integers (say a, b,c) and values in the interval [0,100]. The program output may be one of the following: [Not a quadratic equation; Real roots; Imaginary roots; Equal roots]. [4]
Design the boundary value test cases. What will be the total number of test cases with equivalence, Robust and worst-case testing.

Q.5(c) For the given code, Draw the CFG and find the complexity of the graph. How many test cases will be required to ensure decision, condition and loop coverage. [6]

Enter three sides of a triangle.
Read a, b and c
If(a<b+c)AND(b<a+c)AND(c<a+b)
Then is_a_triangle=TRUE
Else is_a_triangle=FALSE;
IF is_a_triangle
Then
If(a=b)XOR(a=c)XOR(b=c) AND NOT ((a=b)AND(a=c))
Then print "Triangle is Isosceles"
If(a=b)AND(b=c)
Then print "Triangle is Equilateral"
If(a<>b)AND (a<>c) AND(b<>c)
Then print "Triangle is scalene"
Else
Print "Not a triangle"

Q.6(a) Compute function point value for a project with the following domain characteristics: [2]
No. of I/P = 45
No. of O/P = 62
No. of user Inquiries = 24
No. of internal files = 8
No. of external interfaces = 2
Assume that all the complexity adjustment values are average. Out of the 14 adjustment factors only 6 are applicable and are graded high on a five point scale.

Q.6(b) Describe the sub models of COCOMO II. Give the estimation formulae for all of them. [4]

Q.6(c) For a given software product of 30 KLOC where the value of constants A=2.64 and B=1.22; find the value for M, TDEV and effort. Assume that the sum of seven multiplicative factors =0.468. Also find out the total staff size required for the project. [6]

Q.7(a) Explain the meaning of static and dynamic metrics. Give example of static metrics. [2]

Q.7(b) With a block diagram representation explain software review process. [4]

Q.7(c) Write notes on version management, change management and release management. [6]

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