

(Please write your Exam Roll No.)

Exam Roll No

Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63

SECOND SEMESTER [MCA] Internal Examination, February 2020


Paper Code: MCA -110 **Subject: Software Engineering**

Time: 2 Hours

Maximum Marks: 45

Note: Attempt THREE questions in all. Question No. 1 is compulsory and attempt one question from each unit.

1.	Answer ALL questions briefly:-		1.5 x 10 = 15
(a)	In Norden / Rayleigh curve, explain the Influence of parameter 'a' on the manpower distribution/ peak manning.		1.5
(b)	Why is primary goal of software development now shifting from producing good quality software to good quality maintainable software?		1.5
(c)	Define module cohesion and Module Coupling. Can a system ever be completely "decoupled"? That is, can the degree of coupling be reduced so much that there is no coupling between modules?		1.5
(d)	Elaborate the purpose of use case approach with example.		1.5
(e)	Write short note on functional cohesion.		1.5
(f)	Briefly explain the RAD model of software life cycle.		1.5
(g)	Elaborate the significance of object oriented design.		1.5
(h)	Write short note on Detailed COCOMO model.		1.5
(i)	Briefly explain the concept of conceptual design and technical design.		1.5
(j)	Elaborate the significance of software crisis in reference to software engineering discipline.		1.5
UNIT - I			
2.	(a)	Sketch a neat diagram of spiral model of software life cycle. How does "project risk" factor affect the spiral model of software development?	5
	(b)	List five desirable characteristics of a good Software Requirements Specification (SRS).	5
	(c)	Write short note on FAST and QFD.	5
3.	(a)	Draw Use Case diagram for Bank ATM System, including all actors, Use Cases, and relationships. Be sure to use the correct notation for all actors, Use Cases, and relationships. Also be sure to label each and every actor, Use Case, and relationship.	5
	(b)	Discuss the crucial process steps of requirement engineering.	5
	(c)	Discuss the prototyping model. What are the advantages of developing the prototype of a system?	5
UNIT - II			
4.	(a)	Explain Risk Management Steps in a Sound Risk Management Process and also explain various types of risks related to software.	5
	(b)	Consider a large-scale project for which the manpower requirement is $K=600$ PY and the development time is 3 years 6 months. i. Calculate the peak manning and peak time. ii. What is the manpower cost after 1 year and 2 months? The value of \sqrt{e} is 1.648	5

	<p>(c) Consider a project with the following functional units: Number of user inputs = 50 Number of user outputs = 40 Number of user enquiries = 30 Number of user files = 10 Number of external interfaces = 05</p> <p>Assume all complexity adjustment factors and weighting factors are average. Compute the function points for the project.</p> <table border="1" data-bbox="295 403 1369 728"> <thead> <tr> <th rowspan="2">Software Components</th> <th colspan="3">Weighting Factors</th> </tr> <tr> <th>Simple(Low)</th> <th>Average</th> <th>Complex(High)</th> </tr> </thead> <tbody> <tr> <td>User Inputs</td> <td>3</td> <td>4</td> <td>6</td> </tr> <tr> <td>User Outputs</td> <td>4</td> <td>5</td> <td>7</td> </tr> <tr> <td>User Inquiries</td> <td>3</td> <td>4</td> <td>6</td> </tr> <tr> <td>Internal Logical Files</td> <td>7</td> <td>10</td> <td>15</td> </tr> <tr> <td>External Interfaces</td> <td>5</td> <td>7</td> <td>10</td> </tr> </tbody> </table> 	Software Components	Weighting Factors			Simple(Low)	Average	Complex(High)	User Inputs	3	4	6	User Outputs	4	5	7	User Inquiries	3	4	6	Internal Logical Files	7	10	15	External Interfaces	5	7	10	5
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5.	<p>(a) Consider a project to develop a full screen editor. The major components identified are:</p> <ol style="list-style-type: none"> Screen edit Command Language Interpreter File Input & Output Cursor Movement Screen Movement <p>The size of these are estimated to be 4k, 2k, 1k, 2k and 3k delivered source code lines. Use COCOMO to determine overall cost and schedule estimates. Assume that significant cost drivers are:</p> <ol style="list-style-type: none"> Required software reliability is high, i.e.,1.15 Product complexity is high, i.e.,1.15 Analyst capability is high, i.e.,0.86 Programming language experience is low,i.e.,1.07 All other drivers are nominal <table border="1" data-bbox="331 1489 1332 1713"> <thead> <tr> <th>Project</th> <th>a_i</th> <th>b_i</th> <th>c_i</th> <th>d_i</th> </tr> </thead> <tbody> <tr> <td>Organic</td> <td>3.2</td> <td>1.05</td> <td>2.5</td> <td>0.38</td> </tr> <tr> <td>Semidetached</td> <td>3.0</td> <td>1.12</td> <td>2.5</td> <td>0.35</td> </tr> <tr> <td>Embedded</td> <td>2.8</td> <td>1.20</td> <td>2.5</td> <td>0.32</td> </tr> </tbody> </table>	Project	a_i	b_i	c_i	d_i	Organic	3.2	1.05	2.5	0.38	Semidetached	3.0	1.12	2.5	0.35	Embedded	2.8	1.20	2.5	0.32	5							
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	<p>(b) How is function point metric advantageous over LOC metric? Explain. Is it possible to estimate software size before coding? Justify your answer with reasons.</p>	5																											
	<p>(c) Elaborate Data coupling, Control coupling and Content coupling with example.</p>	5																											