

Reg. No.

**MANIPAL INSTITUTE OF TECHNOLOGY**

MANIPAL

A Graduate Institute of Manipal University

**I SEMESTER MCA****END SEMESTER EXAMINATIONS, NOV/DEC 2017****SUBJECT: SOFTWARE ENGINEERING AND PROJECT****MANAGEMENT [MCA 4103]****REVISED CREDIT SYSTEM****(23/11/2017)**

Time: 3 Hours

MAX. MARKS: 50

**Instructions to Candidates:**

- ❖ Answer ALL the questions.
- ❖ Missing data may be suitable assumed.

<b>1A.</b>	Compute the order of cyclomatic complexity for the given program stub by drawing a flow graph also highlighting the no of linearly independent circuits in the graph. <pre> main {   int c,d,f;   scanf("%d",&amp;c);   while(c)   {     d=c%10; c=c/10; f=f*10+d;     if (f&gt;9)     {       c=f; f=0;     }   } }</pre>	<b>5</b>
<b>1B.</b>	If all the tasks within a particular module cater to or are related by a reference to the same input/output data, What type of cohesion is being exhibited? Why is it different from logical or procedural cohesion?	<b>3</b>
<b>1C.</b>	Suppose that testing detects only 85% of the total errors in utility softwares. By adding design and code reviews, the cost of both these phases increases by 15% each with 15% of the errors detected extra in both of these phases.(So testing now typically detects only 55% of the errors effectively). What is the impact on the overall cost of the software positive or negative? Comment giving a proper example to justify the explanation.	<b>2</b>
<b>2A.</b>	Discuss the need of regression testing in a software project implementation. What is the goal of testing? Why is the psychology of the tester important?	<b>5</b>
<b>2B.</b>	Discuss control centralized team structure with an example case study of an appropriate software category where only control centralized team structure can be applied.	<b>3</b>

2C.	Justify "An experienced analyst/project head can be a boon as well as a bane."	2
3A.	Supposing that a 45-KDSI utility program could be purchased for \$4,80,000 assuming that in-house programmers cost \$3220 per programmer months, would it be more cost-effective to buy the product or build it in-house? If the external company which is to provide the product would charge an annual maintenance of \$550 per year for a useful product span of 4 years, whereas the in-house maintenance would come to just \$75 per month, would the decision change in given circumstance?	5
3B.	Give a regular expression for the DCA dept staff record consisting of staffname, qualification, experience, age, address, cellno and designation.	3
3C.	Explain why is it considered that a high fan out could be an indication of a very poor module design. Also specify the categories of modules that could be affected.	2
4A.	Discuss the three categories into which software risks can be classified. What is the correlation between complexity and reliability?	5
4B.	Discuss structural testing and also specify what do you mean by mutation testing?	3
4C.	Mention in what type of coupling, the complete data structure has to be passed from one module to another? Also mention the second worst form of coupling.	2
5A.	The manager of a Maruti Nexa showroom plans to either purchase, rent or lease an automated automobile software simulation system. The outlet is growing day by day with lots of new branches in cities. The software if purchased would cost \$18,000 with an additional \$1300 for software, training and installation. For tax purposes the useful span of the system is four years, maintenance cost per month will be around \$65. If purchased the system will be financed at a 8 percent interest rate of the principal amount. As an alternative the system can be rented for \$950 per month or leased for a 4 year period at a monthly cost of \$780. Remember rates for rent can vary every year depending on the market status, but lease amount would remain the same. i) Which is the best alternative financially for the manager? ii) In what way would the rental option benefit the manager?	5
5B.	If a software on virtualization were to be developed, Which process model would be ideally preferred and which development approach would be more likely to be pursued top-down or bottom-up? Justify the answer with meaningful arguments.	3
5C.	What is the cohesion exhibited in the following module? How would one change the module to increase the cohesion also comment on the coupling achieved in the process  <pre> Procedure CasinoGambleForTwo() Begin     Give the counters initially to both     L1:         Initialize and accept both input values         Call a random no generator routine         Find the nearest match and declare winner         If more players available Goto L1 End </pre>	2