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Roll No. .....

TMC–206

M. C. A. (SECOND SEMESTER) END SEMESTER EXAMINATION, July/Aug., 2022

SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty**.

(iv) Each sub-question carries 10 marks.

1. (a) Distinguish between a Program and a Software product. Explain SDLC and output of each phase. (CO1)

P. T. O.

(b) What are the symptoms of present software crisis ? What factors contributed to the making of present software crisis ? Give *three* examples of failed software. (CO1)

(c) Differentiate between iterative and evolutionary model with the help of diagram. (CO1)

2. (a) Draw a flow chart and DFD for level 0 and 1 for 'Home automation system'. Assume different types of functions by yourself. (CO2)

(b) List the five desirable characteristics of a good SRS. Explain the functional and non-functional requirement. Also explain the different types of feasibility study. (CO2)

(c) Difference between Agile Methodology and waterfall model. Write short notes on KANBAN, SCRUM, Extreme Programming, user Stories and iteration. (CO2)

3. (a) Explain the concept of Cohesion and Coupling for designing. (CO3)

(b) Describe any *two* software size estimation techniques. Explain the difference between object oriented and traditional approach for designing. (CO3)

(c) A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project. (CO3)

4. (a) Write the pseudocode to print odd and even numbers from range (1-100). Identify the following : (CO4)

(i) Draw Control flow graph

(ii) Calculate cyclomatic complexity

(iii) Calculate the linear independent path

(iv) Calculate the bounded areas in the graph

(b) Let us consider an example of grading the students in an academic institution. Generate test cases that will cover 100% of the statements using equivalence class testing technique and Boundary value analysis : (CO4)

Marks Obtained	Grade
80—100	Distinction
60—79	First division
50—59	Second division
40—49	Third division
0—39	Fail

(c) Write short notes on the following : (CO4)

(i) Stress testing

(ii) Mutation testing

(iii) Unit testing

(iv) Integration testing

(v) White box

5. (a) Explain the concept of Re-Engineering and Reverse Engineering. Differentiate between Software Engineering and Re-Engineering. (CO5)

(b) What are PERT CHART and Gantt Chart with the help of following example ? (CO5)

Activity	Predecessor	Optimistic (B)	Normal (m)	Pessimistic (P)
A	—	2	4	6
B	—	3	5	9
C	A	4	5	7
D	A	4	6	10
E	B, C	4	5	7
F	D	3	4	8
G	E	3	5	8

(c) What is Software Configuration Management ? What is the importance of Software Maintenance ? Explain the difference types of maintenance. (CO5)