Total No. of printed pages = 6

63/2 (SEM-3) MCA 3.2

2021

(held in 2022)

MCA

(Theory Paper)

Paper Code : MCA-3.2

(Software Engineering)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions : 1×5=5

(i) What is an error ?

(ii) Define software maintenance.

(iii) What is software process ?

(iv) Define coupling.

(v) What is SRS ?

[Turn over

2. Answer the following questions : 2×5=10

(i) What is meant by software and software engineering ?

(ii) Explain about software crisis.

(iii) What is meant by unit testing ?

(iv) Explain Bottom up design.

(v) What is software prototyping ?

3. Answer any *four* from the following questions : 5×4=20

(i) Explain the role of Inheritance in object oriented design.

(ii) Draw the E-R diagram for Library Management System. Make your own assumption about the system.

(iii) Consider a project with the following functional units

Number of user inputs = 50

Number of user outputs = 40

Number of user enquires = 35

Number of user files = 06

Number of external interface = 04

Assume all complexity adjustment factors and weighting factors are average. Compute the function points for the project.

(iv) Explain software maintenance process.

(v) Describe Gantt charts and PERT charts.

Answer any *four* from the following questions : 10×4=40

4. Describe size estimation technique in software engineering.

5. Explain the waterfall model with some advantages and disadvantages.

6. Explain briefly characteristics of a good Software Requirement Specification (SRS).

7. Describe COCOMO.

8. Describe different types of coupling that can exist between two modules.

9. Draw DFD upto level 2 for student Result Management System. Make your own assumption about the system.

(Theory Paper)

Paper Code : MCA-3.2 (Old)

(Design And Analysis of Algorithms)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer any *five* of the following questions : 2×5=10

   (a) What is Algorithm ?

   (b) What is Asymptotic Notation ?

   (c) What is NP-Complete ?

   (d) What is Greedy algorithm ?

   (e) What is branch and bound paradigm ?

2. Answer any *five* from the following questions : 3×5=15

   (a) What is time complexity of an algorithm ?

   (b) What is dynamic Programming ? Give example.

   (c) Explain backtracking method with example.

   (d) What is Minimum Spanning Tree ?

   (e) What is Asymptotic notation ? Give the name of various types of notation.

   (f) What is Big 'O' notation ?

   (g) Define the term pseudocode and flow-chart.

3. Answer any *five* from the following questions : 6×5=30

   (a) Write the algorithm for DFS.

   (b) Explain the algorithm for Quick sort with suitable example.

   (c) Write the algorithm of Merge sort.

   (d) Write the algorithm of Heap sort.

   (e) What is B-tree ? Explain the time complexity of B-tree.

   (f) Explain reducibility in the context of NP completeness ?

4. Answer any *two* of the following questions : 10×2=20

(a) What is Hashing ? Explain different types of Hash function.

(b) What is Binary Search Tree ? Explain the method of insertion and deletion of elements in the binary search tree.

(c) Write the algorithm of selection sort and find the worst case, best case and average for the algorithm.