# III Semester M.Sc. (CS) Open Book Examination, Sept/October 2020

## SOFTWARE ENGINEERING

### (Batch 2013-14 & Onwards)

**Time: 3 Hours**          **Max. Mark: 80**

### PART – A          (4X5=20)

**Answer any four of the following questions. Each question carries five marks**

1. Explain software engineering, system engineering and computer science.
2. Explain verification and validation planning.
3. Discuss Boehm's Spiral Model of the software process.
4. Explain Waterfall Model.
5. Explain Project Management.
6. Write a note on information presentation.

### PART – B          (3X10=30)

**Answer any three of the following questions. Each question carries ten marks**

7. Discuss Dependability and its dimensions.
8. Describe Client-Server Model.
9. Write a note on User Interface Design Principles.
10. Discuss Object-Oriented Design Process.
11. Describe Black Box Testing.

### PART – C          (2X15=30)

**Answer any two of the following questions. Each question carries fifteen marks**

12. Elucidate Software Design and Implementation.
13. Explain COCOMO Model.
14. Discuss Risk Management Process with a neat labeled diagram.
15. Explain database programming.

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# III Semester M.Sc. (CS) Open Book Examination, Sept/October 2020

## VISUAL TECHNOLOGIES
### (Batch 2013-14 & Onwards)

**Time: 3 Hours**                                          **Max. Mark: 80**

### PART – A                                          (4X5=20)

**Answer any four of the following questions. Each question carries five marks**

1. Explain briefly about the building block of the .NET Solution.
2. Explain Input and Output with console class.
3. Explain C# control flow construct with syntax.
4. What is the finally statement?
5. What method is called when you create an object?
6. How do you define a delegate in C#?

### PART – B                                          (3X10=30)

**Answer any three of the following questions. Each question carries ten marks**

7. Explain in detail about the common type system.
8. Briefly explain conversions between value type and reference types.
9. Explain array manipulations and string manipulations.
10. Explain enumeration and structure in detail.
11. What is the difference between an interface and an abstract base class?

### PART – C                                          (2X15=30)

**Answer any two of the following questions. Each question carries fifteen marks**

12. Describe the working of multidimensional array? Explain.
13. How do you initialize the value of a member variable in a class?
14. Discuss the problems in classic COM binaries.
15. How to create a private assembly in 'C#'? Explain detail with an example.

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# III Semester M.Sc. (CS) Open Book Examination, Sept/October 2020

## COMPUTER GRAPHICS AND VISUALIZATION

### (Batch 2013-14 & Onwards)

**Time: 3 Hours** **Max. Mark: 80**

***Instruction:*** *Answer **any four** questions from Part-**A**, answer **any three** questions from Part-**B** And answer **any two** questions from Part-**C***

## PART – A

Answer **any four** questions: **(4X5=20)**

1. Explain Translation, Rotation and Scaling.
2. Explain Synthetic Camera Model.
3. With the neat diagram explain the programmable pipeline system.
4. Briefly explain the concept of graphics programming in 2-D.
5. Write a short note on culling.
6. Discuss light surface briefly.

## PART – B

Answer **any three** questions: **(3X10=30)**

7. Explain Graphics System.
8. What are the applications of Computer Graphics?
9. Explain filling polygon-defined regions.
10. Describe orthographic and perspective viewing.
11. Briefly explain different types of polygon shading.

## PART – C

Answer **any two** questions: **(2X15=30)**

12. Describe graphics architecture.
13. With a neat diagram explain the architecture of openGL pipeline.
14. Describe affine transformations.
15. Explain the different types of major task in a graphics system.

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# III Semester M.Sc. (CS) Open Book Examination, Sept/October 2020

## DATA MINING
### (Batch 2013-14 & Onwards)

**Time: 3 Hours**                                   **Max. Mark: 80**

***Instruction:*** *Answer **any four** questions from Part-A, answer **any three** questions from Part-**B** And answer **any two** questions from Part-**C***

## PART – A

Answer **any four** questions:                                **(4X5=20)**

1. Explain in detail the types of data warehouses.
2. Explain data cleaning.
3. Explain data transformation with an example.
4. Explain audio data mining.
5. Explain statistical-based outlier detection.
6. What are the requirements of clustering in data mining? Explain.

## PART – B

Answer **any three** questions:                                **(3X10=30)**

7. Explain DMQL syntax for the interestingness measures and thresholds for pattern evaluation with an example.
8. Explain distance-based outlier detection.
9. Explain different hierarchical clustering methods.
10. Explain finding frequent item set using Apriori from transaction data base.
11. How do you check for redundant multilevel association rules? Explain.

## PART – C

Answer **any two** questions:                                **(2X15=30)**

12. Explain the major categories of clustering methods.
13. Explain different methods for dimensionality reduction.
14. Explain different data cleaning techniques with example.
15. Explain Agglomerative and Divisive Hierarchical Clustering.

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# III Semester M.Sc. (CS) Open Book Examination, Sept/October 2020

## SIMULATION & MODELLING
### (Batch 2013-14 & Onwards)

Time: 3 Hours                                                   Max. Mark: 80

### PART – A                                    (4X5=20)

**Answer any four of the following questions. Each question carries five marks**

1. When is the simulation useful as a tool for analysis?
2. Explain stochastic, discrete simulation and give an example of such a model.
3. What are the three major steps in the simulation process? Explain inventory simulation.
4. What is transient? How can they be eliminated?
5. Explain simulation of telephone system. Show five states. Show changes in all types of calls in these five states.
6. Discuss some methods of generating random numbers and the associated problems for computer simulation.

### PART – B                                    (3X10=30)

**Answer any three of the following questions. Each question carries ten marks**

7. Define simulation. Bring out the applications of simulation in management and human systems.
8. Explain Model Building, Validation and Verification with a neat diagram and a flow chart.
9. Discuss Empirical Distribution.
10. Discuss some methods of generating random numbers and the associated problems for computer simulation.
11. What is transient? How can they be eliminated?

### PART – C                                    (2X15=30)

**Answer any two of the following questions. Each question carries fifteen marks**

12. Discuss some general methods of modeling input.
13. Define and distinguish terminating and non-terminating simulation process.
14. Write a note on modeling a system.
15. Explain blocking method.

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# III Semester M.Sc. (CS) Open Book Examination, Sept/October 2020

## THEORY OF COMPUTATION
### (New Scheme, 2018-19 Batch)

**Time: 3 Hours**                                 **Max. Mark: 80**

***Instruction:*** *Answer **any four** questions from Part-**A**, answer **any three** questions from Part-**B** And answer **any two** questions from Part-**C***

## PART – A

Answer **any four** questions:                                 **(4X5=20)**

1. What are the finite state machines? Explain.
2. Define DFA. Give an example.
3. Write a note on post correspondence problem.
4. Explain the Halting problem of Turing Machine.
5. Show that CFLs are closed under substitution and union.
6. Explain Chomsky normal form.

## PART – B

Answer **any three** questions:                                 **(3X10=30)**

7. Define NFA with c-transitions. Give an example. Describe the procedure of converting NFA to DFA.
8. State and prove Pumping Lemma.
9. Write a DFA to accept the intersection of L1=(a+b)*a and L2=(a+b)*b that is for L1 ∩ L2.
10. Define the following and give an example.
    a) 3-address code     b) Syntax tree     c) Quadruple d) Triple
    e) Indirect triple.
11. Explain Non Deterministic Turing Machine.

# PART – C

Answer **any two** questions: **(2X15=30)**

12. Show that following languages are not regular.
    a. L= $\{a^n b^m \mid n, m \geq 0$ and $n < m\}$
    b. L= $\{a^n b^m \mid n, m \geq 0$ and $n > m\}$
    c. L= $\{a^n b^m c^m d^n \mid n, m \geq 1\}$
    d. L= $\{a^n \mid n$ is a perfect square$\}$
    e. L= $\{a^n \mid n$ is a perfect cube$\}$
13. Define regular expression. Explain how to convert NFA/DFA for a regular expression.
14. Design a context free grammar for an arithmetic expression.
15. Explain error-recovery mechanism in detail.

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