Printed Pages:2 **Sub Code:RCAI-901**

Paper Id: 2 3 1 0 5 0 **Roll No.** | | | | | | | | | | |

MCA (Integrated)
(SEM IX) THEORY EXAMINATION 2022-23
COMPUTER GRAPHICS

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

(a) Point out advantages and disadvantages of Bresenham's line drawing algorithm.
(b) Discuss curve clipping.
(c) Define orthographic projection.
(d) Differentiate between interpolation and approximation.
(e) What do you mean by spline? Give some examples of blobby objects.
(f) Discuss specular reflection.
(g) List out various types of illumination.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

(a) With the help of an example, discuss mid-point circle drawing algorithm.
(b) What do you mean by general fixed-point scaling? Find out the matrix for it.
(c) By taken an example discusses various types of 2D reflections.
(d) Discuss Z-Buffer algorithm of hidden surface removal.
(e) What are the various illumination models? Discuss any one of them.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) What do you mean by CRT? Discuss its main components.
(b) How the line can be drawn using Bresenham's algorithm? Discuss with the help of an example.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) What do you mean by translation and scaling? Discuss them by taking an example?
(b) Whether 2D rotation follow commutative property or not? Discuss.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Discuss various anomalies exists in perspective projection.
(b) Discuss various types of perspective projections.

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) Write short note on parametric representation of surfaces.
(b) Write short note on Bezier curves.

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) What is the various shading? Discuss any one of them.
(b) Differentiate between image space and object space methods.

Printed Pages:02 **Sub Code:RCAI-902**

Paper Id: | 2 | 3 | 1 | 1 | 4 | 4 | **Roll No.** | | | | | | | | | | |

MCA (Integrated)
(SEM IX) THEORY EXAMINATION 2022-23
SOFTWARE ENGINEERING

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

(a) What is software?

(b) List 2 documentation manual.

(c) Define software Requirement.

(d) Explain Level 0 Data Flow diagram.

(e) Define testing.

(f) Define Baseline.

(g) List 2 configuration items.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

(a) Explain the advantages and disadvantages of Spiral Model.

(b) Discuss the impact of feasibility study. Explain the any 2 types of feasibility study.

(c) Define Software Design. Explain different levels of software design.

(d) What is the importance of Coding Standards? Explain the guidelines of coding standards.

(e) Explain the need of Resource Allocation Model. Explain the Norden's Model of Resource Allocation.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the various phases of waterfall model.

(b) Explain the difference between spiral model and prototype model.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the CMM and its levels in detail.

(b) Explain the various types of requirements in detail.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) What is function Oriented Design? Explain the advantages of Modular System.

(b) Illustrate coupling with its types in detail.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the various types of System Testing.

(b) Calculate the Cyclomatic Complexity of following Code:

```
int main() {
   int n, i;
   long fact = 1;
   printf("Enter an integer: ");
   scanf("%d", &n);

      if (n < 0)
      printf("Error! Factorial of a negative number doesn't exist.");
   else {
      for (i = 1; i <= n; ++i) {
         fact *= i;
      }
      printf("Factorial of %d = %l", n, fact);
   }

   return 0;
}
```

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the various activities of Risk Assessment.

(b) Explain the process of change control.

Printed Pages:02 **Sub Code: RCAI-021**

Paper Id: 231275 **Roll No.** | | | | | | | | | | |

MCA - INTEGRATED
(SEM IX) THEORY EXAMINATION 2022-23
CRYPTOGRAPHY AND NETWORK SECURITY

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

(a) Differentiate terms Steganography and Cryptography.
(b) What do you mean by masquerade attack?
(c) What do you mean by message integrity? Give suitable example for message integrity.
(d) What is denial of service attack?
(e) What is Euler's theorem?
(f) How message authentication code is different from hash function?
(g) Define ransom attack.

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

(a) What is the difference between a substitution cipher and a permutation cipher? Explain with suitable example.
(b) Define Euler's totient function or phi function and their applications.
(c) What do you understand by message authentication code (MAC)? What are the requirements of a message authentication code?
(d) How does PGP provide confidentiality and authentication service for e-mail and file storage applications? Draw the block diagram and explain its components.
(e) Discuss clearly Secure Hash Algorithm (SHA).

SECTION C

3. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Explain in detail Transposition Technique?
(b) Write short notes on
(i) Security attacks
(ii) Security services

4. Attempt any *one* part of the following: **7 x 1 = 7**

(a) What is a permutation cipher? Suggest an approach to break a permutation cipher assuming that sufficient amount of cipher text is available to the adversary.

(b) Write RSA algorithm if n = 187 and the encryption key e=17, find out the corresponding private key.

5. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) Describe the properties of a cryptographic hash function. Clearly describe how a cryptographic hash function can be implemented using a block cipher.

(b) Briefly explain Diffie-Hellman key exchange with an example.

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) Mention the scenario where Kerberos scheme is preferred.
(b) Explain S/MIME.

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) Explain firewalls and how they prevent intrusions.
(b) Explain Secure Electronic transaction with neat diagram.

Printed Pages:02 **Sub Code: RCAI-031**

Paper Id: 231491 **Roll No.** | | | | | | | | | | |

MCA (INTEGRATED)
(SEM IX) THEORY EXAMINATION 2022-23
CLOUD COMPUTING

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

(a) What is the principle of Cloud Computing?
(b) What is online collaboration in Collaborating on report?
(c) What do you mean by full virtualization?
(d) List the task management applications in cloud.
(e) What is Hunt calendar?
(f) Differentiate between Grid Computing and Distributed computing.
(g) What is Web Mail Services?

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

(a) What do you understand by cloud analytics? Explain also describe how it works?
(b) What is the difference between process virtual machines, host VMMs and native VMMs.
(c) Explain the risk from multi-tenancy with respect to various cloud environment.
(d) Describe the major cloud features of Google application engine.
(e) Enlist and explain some of the common pitfalls that come with virtualizations.

SECTION C

3. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Explain the services provided by Amazon infrastructure cloud from user perspective.
(b) What do you mean by communication as service? Discuss any two service provider used in cloud computing in detail.

4. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Describe the characteristics of cloud computing environments.
(b) What do you understand by service oriented architecture (SOA). How it support cloud computing?

5. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Explain IaaS. How EC2 renting of Amazon works?
(b) What are the advantages and disadvantages of cloud computing? Explain in detail.

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) How to implement virtualization in your organization. Explain in detail.

(b) Discuss about the collaborating on schedules? How is cloud computing beneficial for children?

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a) Discuss the various Standards for application developers with their features, pros and cons in cloud perspective.

(b) List the application of cloud computing. Discuss the various cloud storage providers.

Printed Pages: 01 **Sub Code: RCAI-041**

Paper Id: 231709 **Roll No.** | | | | | | | | | | |

MCA (INTEGRATED)
(SEM IX) THEORY EXAMINATION 2022-23
DISTRIBUTED DATABASE SYSTEMS

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

(a) What do you understand by transaction and schedules?
(b) Why concurrency is required?
(c) What do you understand by serializability?
(d) What are various types of granularity?
(e) Define upgrade and downgrade in locking protocol.
(f) Describe Quorum consensus method.
(g) What is log file?

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

(a) Draw and explain state transition diagram.
(b) What is lock? Explain different types of lock?
(c) Explain two phase locking with its advantages & disadvantages.
(d) What are distributed database design issues? Explain in brief.
(e) Write a note on distributed deadlock detection?

SECTION C

3. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Discuss following with an example:
  (i) The lost update problem
  (ii) The dirty read problem
(b) Discuss cascadeless schedule and cascading rollback.

4. Attempt any *one* part of the following: **7 x 1 = 7**

(a) What is wait-for graph? Where is it used? Explain with an example.
(b) How is locking implemented? What is the role of the lock manager and lock table in lock implementation?

5. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Describe these terms in reference of DDBMS:
  (i) Fragmentation
  (ii) Transparency
(b) Differentiate between homogenous and heterogeneous distributed database management system.

6. Attempt any *one* part of the following: **7 x 1 = 7**

(a) What are various log based recovery methods? Discuss any one log based recovery method in detail.
(b) How recovery of data can be done more efficiently with concurrent execution.

7. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Describe a cost estimation of query in a distributed database.
(b) Explain the phantom phenomenon with an example.