S–3898

Sub. Code
23MCI1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Computer Science and Information Technology

DATA STRUCTURES AND ALGORITHMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Traversal of a list.
2. What are the types of sorting?
3. What are the applications of stack?
4. What is Circular Queue?
5. Define Trees.
6. What is the purpose of Hashing Techniques?
7. What is Linear search?
8. What is meant by quick sort?
9. List any five steps of algorithm.
10. What is Omega notation?

Part B $(5 \times 5 = 25)$

Answer **all** the questions, choosing either (a) or (b).

11. (a) Write short notes on.
    (i) Insertion of an item in list
    (ii) Deletion of an item in list.

Or

(b) Explain the Merging lists with example.

12. (a) Explain briefly about Operations on a stack.

Or

(b) Illustrate the Doubly Linked List.

13. (a) Explain the Insert operation in Binary with example.

Or

(b) Summarize the Dijkstra's Algorithm.

14. (a) Discuss about the Selection sort.

Or

(b) Demonstrate the Merge sort with suitable Example.

15. (a) Write down Pseudo code for expressing algorithms.

Or

(b) Explain Asymptotic notation with example.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. What are the types of sorting list any five with example

17. Discuss the application of stacks with example.

18. Explain the Hashing techniques with example.

19. Illustrate the Quick sort with suitable Example.

20. Explain the Little of notation with Example.

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S–3899

Sub. Code
23MCI1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Computer Science and Information Technology

ADVANCED JAVA PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the features of java?
2. List out any five operators.
3. What is meant by Hierarchy of collection framework?
4. Define HashMap?
5. Given any one query of MYSQL.
6. What is UDP-URL?
7. List out any five tiered application development.
8. Define cookies.
9. What is optional class?
10. What is meant by java default methods.

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Distinguish between Package and Interface (Any 6 points).

Or

(b) Elaborate the steps involved in Thread Life Cycle.

12. (a) Differentiate between Error and Exception with suitable example program.

Or

(b) Compare the Comparable and comparator interface.

13. (a) Insect the steps to get the object of Result Set MetaData.

Or

(b) Elaborate the Connectivity of JDBC with MySQL.

14. (a) Sketch the Servlet Architecture and Explain it.

Or

(b) Describe the socket Program using TCP/IP.

15. (a) What are the different default methods involved in Java?

Or

(b) Summarize the Functional Interface in Java.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Summarize the String methods using example programs for each method.

17. Elaborate about the Hierarchy of collection framework with a neat sketch.

18. Discuss any three protocols associated with sockets.

19. Design an Enterprise Application System using Spring Framework.

20. Elaborate the types of Method Reference.

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S–3900	Sub. Code
	23MCI1C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Computer Science and Information Technology

STATISTICAL COMPUTING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is Linear correlation and its types?

2. Define Spearman's Rank correlation.

3. What is Least square method?

4. List out any five properties of regression coefficients.

5. What is meant by Probability distribution Random variable?

6. Define Exception of Random variable.

7. List out any five Merits of sampling.

8. Define chi-square(χ^2).

9. Define Estimation.

10. Given an example of signification of a mean.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain Karl Pearson's coefficient of Linear correlation.

Or

(b) Summarize the Probable error in coefficient of determination.

12. (a) Explain briefly about Regression with example.

Or

(b) Discuss the Least square methods and its types.

13. (a) Explain the probability distribution in random variable.

Or

(b) Discuss the Random variable with example.

14. (a) Insect about the Limitations of sampling.

Or

(b) Explain the chi-square with example.

15. (a) Explain the Confidence interval using normal.

Or

(b) Discuss the Testing Hypothesis and its types.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Summarize the Merits and Limitation of coefficient of correlation.

17. Explain the Linear Regression Equations with example.

18. Elaborate the concepts of Exception Random variable with its types.

19. Explain the sampling distribution with example.

20. Summarize the Concept of testing and hypothesis.

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S–3901

Sub. Code
23MCI1E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

First Semester

Computer Science and Information Technology

Elective — MULTIMEDIA AND ITS APPLICATIONS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is shooting and editing tools?
2. Expand MIDI Audio.
3. List out the animation techniques.
4. What is multimedia hardware?
5. What are multimedia authoring systems?
6. Define multimedia software.
7. What is internetworking?
8. How to develop web text for web pages?
9. Define internet history.
10. How sound for the web is used?

Part B (5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) Explain the components of multimedia with example.

Or

(b) Describe the Font editing and design tools.

12. (a) Describe about Image file format.

Or

(b) Elaborate the Concept of Color flashing.

13. (a) Illustrate about the MIDI audio.

Or

(b) Explain the Short notes on Digital Video Containers.

14. (a) Elaborate the Animation techniques.

Or

(b) Describe the Multimedia authoring system.

15. (a) Difference between internet and internetworking.

Or

(b) Explain the text for the web.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the Fonts and faces that used in multimedia with suitable example in brief.

17. Explain the Color dithering with suitable Example.

18. Explain about the Digital Video standard.

19. Elaborate the Multimedia skills.

20. Explain the Designing for the World Wide Web with suitable web page design example.

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S–3904	Sub. Code
	23MCI2C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Computer Science and Information Technology

ADVANCED DATABASE MANAGEMENT SYSTEMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is database management?
2. Define 4NF.
3. What is protocol?
4. Define Query.
5. What is spatial database?
6. What is query processing?
7. What is data model?
8. What is XML?
9. What is a relational operator?
10. What is multimedia database?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain ER model in detail.

Or

(b) Discuss about Intra query parallelism.

12. (a) Write a short note on Oriented versus object relational.

Or

(b) Discuss about Table inheritance.

13. (a) Explain the characteristics of spatial database.

Or

(b) Write a short note on spatial data model.

14. (a) Describe about DTD in detail.

Or

(b) Explain about XML Querying.

15. (a) Explain about packing and unpacking relations.

Or

(b) Discuss about Multimedia Database Applications.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about Normalization. Explain about BCNF in detail.

17. Write a detailed note on structured types and Inheritance.

18. Discuss about Propositional and Predicate calculus.

19. Explain about XML documents and its applications.

20. Briefly discuss about Multimedia databases.

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S–3905

Sub. Code
23MCI2C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Computer Science and Information Technology

OPEN SOURCE TECHNOLOGIES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Open Source?
2. What is Kernel?
3. What is PHP?
4. Define String manipulation.
5. What is Query?
6. What is Database?
7. Define Python.
8. What is Tuple?
9. Define web server.
10. What is IDE Platform?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) List out the advantages of Open source.

Or

(b) Explain about cloning and backup the Linux system.

12. (a) Briefly discuss about common PHP script elements.

Or

(b) Explain about file access in PHP.

13. (a) Write a note on record selection technology.

Or

(b) In what way data have been manipulated in MYSQL using PHP.

14. (a) Explain about Python objects.

Or

(b) Discuss about Classes and OOP in Python.

15. (a) Explain about Apache web server in Open source technologies.

Or

(b) Discuss about Open source software tools.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Briefly discuss about kernel mode and user mode process.

17. List out the various common PHP script elements and its uses.

18. Describe about working with metadata in MYSQL.

19. Explain briefly about Errors and Exceptions.

20. Discuss about configuring and using apache web services in open source technologies.

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S–3906

Sub. Code
23MCI2C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Computer Science and Information Technology

COMPILER DESIGN

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the main objective of analyzing a source program?

2. In which phase of the compiler is syntax-directed translation primary used?

3. Name the characteristics of top-down parsing.

4. How does a hash table improve the efficiency of symbol table operations?

5. What is the main purpose of type checking in a compiler?

6. List the key components of a simple type checker?

7. What types of information is stored in the symbol table for variable declarations?

8. State the challenges in designing a source language for a compiler?

9. Outile the key considerations when designing a code generator for a compiler?

10. Differentiate between static and dynamic memory allocation.

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) How are tokens specified in a compiler?

Or

(b) Describe the process of recognizing identifiers and keywords during lexical analysis.

12. (a) Explain the concept of bottom-up parsing

Or

(b) Describe the various types of entries that can be found in a symbol table.

13. (a) Describe the process of types checking in compilers.

Or

(b) How do abstract and concrete syntax trees help in the compilation process?

14. (a) Discuss the advantages of using three-address code as an intermediate representation.

Or

(b) Compare and contrast call-by-value and call-by-reference parameter passing mechanisms.

15. (a) Discuss the impact of instruction selection and allocation on the design of code generators.

Or

(b) Explain the concept of stack-based and heap-based memory allocation.

Part C ($3 \times 10 = 30$)

Answer any **three** questions.

16. Explain the role of finite automata in lexical analysis and their use in recognizing tokens.

17. Describe the working of shift-reduce parser. Provide an example to illustrate the parsing process.

18. Discuss the application of L-attributed definitions in the context of attribute grammars.

19. Write a detailed account on shot-circuit evaluation of Boolean expressions.

20. How do machine-dependent and machine-independent optimizations influence the design of code generators?

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S–3907

Sub. Code
23MCI2E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Second Semester

Computer Science and Information Technology

Elective: SOFTWARE TESTING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions

1. What are the principles of software testing?
2. What are the foundations of software testing?
3. Define Software development life cycle.
4. What is V-model?
5. Define black box testing.
6. What is acceptance testing?
7. Define test process.
8. What is embedded software?
9. What is test management?
10. Define reporting.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss about various software testing activities.

Or

(b) Describe the importance of software testing.

12. (a) Explain about waterfall model.

Or

(b) Briefly discuss about the comparison of various life cycle models.

13. (a) Discuss about domain testing and its importance in software testing.

Or

(b) Explain about testing web applications and web services.

14. (a) Discuss about regression testing.

Or

(b) Explain the functions of test plans.

15. (a) Discuss about perceptions and misconception about testing.

Or

(b) Explain about carrier path for testing professionals.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about module driven test design in software testing.

17. Explain about prototyping and rapid application development.

18. Discuss in detail about scenario testing.

19. Explain about Testing GUI.

20. Discuss briefly about test management and automation.

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S–3911	Sub. Code
	23MCI3C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science and Information Technology

DATA SCIENCE AND MACHINE LEARNING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define datafication.
2. Write the difference between data science and data analytics.
3. What role does the data visualization play in EDA?
4. How does feature generation work in a project?
5. Name two common techniques for feature extraction in text data.
6. Write down the main purpose of feature selection in ML.
7. Discuss the reinforcement learning.
8. List out the role labelled data in supervised learning.
9. Give a note on computation learning.
10. What are the challenges faced in the maximum likelihood?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is the role of cross-validation in model fitting? Give an example.

Or

(b) Discuss the use of systematic sampling in big data environments.

12. (a) Mention the steps involved in conducting Exploratory Data Analysis.

Or

(b) Write a note on linear regression with its algorithm.

13. (a) Give a note on the selection algorithm for using the filter option.

Or

(b) How does singular value decomposition work in the algorithms?

14. (a) List the issues faced in the interpretability of ML models.

Or

(b) What are the steps involved in building a decision tree representation of a dataset?

15. (a) Write a brief note on the concept of the likelihood function and its relationship to observe data and model parameters.

Or

(b) Briefly discuss the sample complexity in probability learning.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the different terminologies used in data science with an example.

17. Describe the process of training a neural network and give an example.

18. Write a detailed note on the random forest algorithm with its example.

19. Illustrate the heuristic space search algorithm in decision tree learning.

20. Give a detailed note on the Bayesian Theorem with its appropriate example.

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S–3912

Sub. Code
23MCI3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science & Information Technology

ADVANCED WEB TECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** Questions.

1. What is the purpose of the <meta> tag in HTML?
2. Name two commonly used HTML form input types.
3. Define the term “serialization" in the context of PHP.
4. How do you declare a variable in PHP?
5. Write the purpose of the XML DOM.
6. How do you load an XML file in PHP?
7. What is Node.js?
8. Name two popular modules in the Node.js ecosystem.
9. Define the term “environment configuration” in Angular.
10. What is the Angular HttpClient service used for?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the difference between the and tags in HTML.

Or

(b) Describe the function of the action attribute in an HTML form.

12. (a) Explain the process of connecting PHP to a MySQL database.

Or

(b) Discuss the concept and use of introspection in PHP.

13. (a) What are the key components of the AJAX web application model?

Or

(b) Compare AJAX with traditional web application model.

14. (a) Explain the role of Node.js in back-end JavaScript development.

Or

(b) How to create a simple API endpoint in Node.js?

15. (a) What are the key features of Angular reactive forms?

Or

(b) How to perform HTTP GET and POST requests using Angular's HttpClient.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the role of various HTML5 semantic tags and their impact on web accessibility and SEO.

17. Detail the concept of serialization and deserialization in PHP. Explain their importance and use cases with examples.

18. Elaborate various techniques and best practices for implementing AJAX-based validation with examples.

19. Discuss the architecture of a Node.js application and explain how Node.js handles asynchronous operations.

20. Evaluate the process of configuring and using the Angular HttpClient service to communicate with a backend API.

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S–3913

Sub. Code
23MCI3C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science & Information Technology

DISTRIBUTED OPERATING SYSTEM

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Name two types of distributed operating systems based on their architecture.

2. Define deadlock in the context of distributed systems.

3. What is mutual exclusion in the context of distributed operating systems?

4. Give short notes on Lamport's logical clock and its significance in distributed systems.

5. What is a distributed file systems?

6. Define design issues in distributed file systems.

7. What is a dynamic voting protocol in the context of fault tolerance?

8. Briefly about recovery in concurrent systems and its challenges.

9. Define a multiprocessor operating system.

10. What is memory management in the context of distributed operating system?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the challenges of process synchronization in distributed operating systems.

Or

(b) What are the causes and consequences of deadlock in distributed systems?

12. (a) Explain mutual exclusion algorithms used in distributed systems.

Or

(b) Discuss the challenges and techniques involved in deadlock detection and resolution in distributed operating systems.

13. (a) Explain the mechanisms used for file replication and consistency in distributed file systems.

Or

(b) Discuss the architecture of a distributed file system, including its components and their roles.

14. (a) Discuss the mechanisms and techniques used for recovery and fault tolerance in distributed operating systems.

Or

(b) How recovery is managed in concurrent systems, including methods such as checkpointing and logging.

15. (a) Differentiate processes and threads in operating systems.

Or

(b) Discuss the principles and techniques of memory management in distributed operating systems.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail the mechanisms and algorithms used for process synchronization in distributed operating systems. Include examples and their applications.

17. Compare and contrast different agreement protocols used in distributed systems.

18. Elaborate the mechanisms and algorithms used for file replication and consistency in distributed file systems.

19. Discuss the role of coordination, logging, and rollback techniques.

20. Explain the techniques such as paging, segmentation, virtual memory, and their impact on system performance and scalability.

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S–3914

Sub. Code
23MCI3E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science and Information Technology

Elective : BLOCK CHAIN TECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions

1. Mention any two types of Blockchain.
2. What are the methods of decentralization?
3. Give a note on the Digital Signature.
4. What is asymmetric cryptography?
5. Define Litecoin.
6. How to transfer the bitcoin in the Blockchain platform?
7. Discuss the Ethereum 101.
8. Write a note on pre-compiled contracts.
9. Give a healthcare example for Blockchain.
10. How to sell a Bitcoin?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Give a short note on Blockchain history.

Or

(b) What are the benefits we obtained through Blockchain?

12. (a) Write a short note on the contribution of blockchain in Financial Marketing.

Or

(b) Discuss the cryptography.

13. (a) Write a brief note on the process of Bitcoin transactions.

Or

(b) Briefly discuss the namecoin with its examples.

14. (a) List out the elements of the Ethereum blockchain and write about its usage.

Or

(b) How does the network of Ethereum work?

15. (a) Mention the functionality of digital tokens.

Or

(b) Give a note on the alternate Blockchain.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the blockchain and full ecosystem decentralization.

17. Describe the symmetric and asymmetric functions in cryptography.

18. Discuss in detail about the primecoin and its history.

19. Write a detailed note on the applications developed on Ethereum.

20. Illustrate the blockchain platforms with their appropriate diagram.

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S–3915

Sub. Code
23MCI3E2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science and Information Technology

Elective: WEB SERVICES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What are the main challenges associated when using DCOM?

2. Discuss the challenges related to data consistency in distributed systems.

3. What is the purpose of SOAP headers in SOAP messages?

4. Write down the role of WSDL in web service development.

5. What are orchestration and choreography in service composition?

6. What is an event broker in EDA?

7. Why is WSDL important in describing web service interfaces?

8. Define the <port Type> element in WSDL.

9. Mention the benefits of using UDDI in an enterprise environment.

10. How does UDDI ensure data integrity?

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss how load balancing and scalability are achieved in distributed systems using client/server model.

Or

(b) Discuss in detail the challenges related to fault tolerance and resilience in distributed systems.

12. (a) Explain the role of XML in web services communication.

Or

(b) Compare Enterprise Service Bus and API Gateway as integration technologies for web services.

13. (a) Explain the concept of XML namespaces and why they are important in XML documents.

Or

(b) Describe XPath and XSLT in XML document processing.

14. (a) List down security-related elements available in WSDL?

Or

(b) How does WSDL address non-functional aspects such as reliability and security?

15. (a) Explain how service registries ensure the availability and reliability of services in an SOA.

Or

(b) Describe the role of metadata in the service discovery process.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Analyze the architecture and capabilities of DCOM in enabling distributed computing within the Windows ecosystem.

17. Describe the architectural principles and constraints of RESTful web services.

18. Identity common challenges faced by the organizations when adopting SOA.

19. Discuss the performance considerations when using WSDL in high-throughput web services.

20. Explain the UDDI architecture and its core components.

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S–3916

Sub. Code
23MCI3E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science and Information Technology

Elective – DIGITAL IMAGE PROCESSING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is digital image processing?
2. Define DFT.
3. What is histogram?
4. What is low pass filter?
5. Define degradation.
6. What is spatial domain?
7. What is redundancy?
8. Define lossless compression.
9. What is pattern recognition?
10. Define bayes classifier.

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss about acquisition storage.

Or

(b) Describe the importance of image formulation in the eye.

12. (a) Explain about spatial domain methods.

Or

(b) Briefly discuss about image averaging and image subtraction.

13. (a) Discuss about degradation models.

Or

(b) Explain about least mean square filter.

14. (a) Discuss about psycho visual redundancy.

Or

(b) Explain the functions of lossless compression.

15. (a) Discuss about perception criterion function.

Or

(b) Explain about syntactic pattern recognition.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss about the properties of two-dimensional Fourier transform.

17. Explain about gray level and bit plane slicing.

18. Discuss in detail about restoration in the spatial domain.

19. Explain about image compression models.

20. Discuss briefly about Ho Kashyap procedure.

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S–3917

Sub. Code
23MCI3S1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

Third Semester

Computer Science and Information Technology

E-COMMERCE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** Questions.

1. Define electronic commerce.

2. What is media convergence in the context of electronic commerce?

3. What is the 'I-way' in the context of electronic commerce?

4. Name two components of the I-way.

5. What is NSFNET?

6. Define the term 'network infrastructure'.

7. What is an electronic payment system?

8. Define a digital token-based electronic payment system.

9. What is mobile computing?

10. Define wireless delivery technology.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the role of electronic commerce frameworks in business operations.

Or

(b) Discuss the impact of media convergence on electronic commerce.

12. (a) Explain the role of network infrastructure in electronic structure.

Or

(b) Describe the main components of the I-way.

13. (a) Provide an overview of the National Research and Education Network (NREN)

Or

(b) Discuss two important terms used in Internet terminology.

14. (a) Explain the basic components of an electronic payment system.

Or

(b) Describe how digital token-based electronic payment system work.

15. (a) Describe the role of mobile information access devices in mobile computing.

Or

(b) Discuss two common cellular data communication protocols.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the anatomy of e-commerce applications, including front-end and back-end components, and their functions.

17. Examine the various components of the I-way and their importance in supporting electronic commerce.

18. Discuss the chronological history of the Internet, highlighting key milestones and their significance.

19. Discuss the potential risks associated with electronic payment systems and suggest strategies for mitigating these risks.

20. Outline the different switching methods used in wireless delivery technology.

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