

R6107

Sub. Code

551101

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Computer Science

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is Algorithm Design and Analysis of process?
2. What is the running time of a program while implementing the Algorithm?
3. Give the general plan for Divide-and-Conquer algorithms.
4. Define Quick Sort.
5. What is Minimum Spanning Tree?
6. What are the operations to be done after identifying a vertex u^* to be added to the tree?
7. Write the general procedure of Dynamic Programming.
8. Define Knapsack Problem.
9. Define Branch and Bound algorithm.
10. What is the strength of Backtracking algorithm?

Part B

(5 × 5 = 25)

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

11. (a) What is Asymptotic Notation? Explain.

Or

- (b) Write short note on Algorithm Efficiency.

12. (a) Write a detailed note on Divide and conquer method.

Or

- (b) Examine Quick Sort algorithm with relevant example.

13. (a) Discuss the techniques used in greedy method.

Or

- (b) Analyze the importance of single source shortest paths algorithm with example.

14. (a) Explain about traveling salesman problem and it is solved using dynamic programming.

Or

- (b) Write an algorithm to find optimal binary search tree.

15. (a) Discuss about sum of subsets with backtracking algorithm.

Or

- (b) Discuss about Graph Coloring.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about Performance Analysis of an algorithm.
17. “The Binary Search Technique is used to search for a particular data item in a sorted (in ascending or descending order) array.” Discuss.
18. Explain Kruskal’s method of finding Minimum cost Spanning Tree algorithm.
19. Explain in detail about basic Traversal and Searching techniques with an example.
20. “Bounding deals with how to compute the cost associated with each node. The cost at each node is obtained by performing the following operations on cost matrix.” Discuss.

R6108

Sub. Code

551102

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Computer Science

ADVANCED WEB TECHNOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is ASP.NET?
2. What is the concept of Post back in ASP.NET?
3. What is the difference between Machine.config and Web.config?
4. Which validation control you use if you need to make sure the values in different controls matched?
5. List all the templates of the repeater control?
6. What are the components ADO.Net?
7. What is the file extension of web service?
8. What is caching?
9. What is the difference between authentication and authorization?
10. How to sign out from forms authentication?

Part B

(5 × 5 = 25)

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

11. (a) What are the advantages of ASP.Net?
Or
(b) What is assembly? Explain different types of assemblies supported by ASP.Net?
12. (a) What are the built-in objects in ASP.Net? Explain.
Or
(b) What is the difference between Server Transfer, Response and Redirect? Explain it in details.
13. (a) What are the key features of ASP.net? Discuss it.
Or
(b) Describe the ADO.net object model in detail
14. (a) What are the web services in ASP.Net? Explain.
Or
(b) What are the various types of authentication in ASP.Net? Explain it in detail.
15. (a) Explain login control and form authentication.
Or
(b) Explain the ASP.Net security models.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the ASP.net page life cycle.
17. What are the various types of validation controls provided by ASP.Net? Discuss it.

18. What is the difference between Data Reader and Data Set? Explain.
 19. Give an example of real web service. Discuss.
 20. What is caching in ASP.Net? Elaborate it.
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R6109

Sub. Code

551103

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Computer Science

ADVANCED DATABASE MANAGEMENT SYSTEMS

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define ER model.
2. Point out the role of Normalization.
3. What is meant by Distributed data storage?
4. How persistent objects are maintained in Object Oriented Databases?
5. Write dissimilar types of queries in Spatial Database.
6. Differentiate Object Oriented and Object Relational databases.
7. Mention the significance of XML Documents.
8. What is XHTML?
9. Define Database Design.
10. What is meant by Multimedia Sources?

Part B

(5 × 5 = 25)

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

11. (a) Differentiate the concept of object in ER model and object oriented model.

Or

- (b) Explain the importance of Nested Relational Data Model.

12. (a) Describe about Type Hierarchies and Inheritance.

Or

- (b) Write notes on Object Identity, object structure and Reference Types in object oriented databases.

13. (a) Elucidate about Spatial Data Model.

Or

- (b) Discuss about Deductive Database Systems.

14. (a) Explain about XML Schema with suitable examples.

Or

- (b) Illustrate about Document Type Definition.

15. (a) Differentiate distributed processing in computing systems and DDBMS.

Or

- (b) Describe about purpose of Multimedia Database. List some applications.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the concept of 3NF, 4NF and 5NF Normal Forms with suitable examples.
 17. Describe the importance of Object Oriented Database Design and Implementation Process.
 18. Write notes on Recursive Query Processing with examples.
 19. Illustrate the concept of XML Hierarchical data model.
 20. Discuss in detail about temporal databases design with examples.
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R6110

Sub. Code

551104

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021.

First Semester

Computer Science

COMPILER DESIGN

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Section A

(10 × 2 = 20)

Answer **all** questions.

1. What is a lexeme? Define a regular set.
2. What are the Error-recovery actions in a lexical analyzer?
3. Why do you need Syntax Analyzer?
4. Syntax vs. Lexical Analyses
5. Types and Declarations in semantic analysis
6. What is the use of Dependency graphs.
7. List the three kinds of intermediate representation.
8. Syntax of three-address.
9. Define : Code Optimization.
10. What is target language?

Section B

(5 × 5 = 25)

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

11. (a) Why we use parameter passing mechanism?
Explain.

Or

- (b) Discuss the Rules for conversion of Regular Expression to NFA.

12. (a) Explain left and right most Derivation.

Or

- (b) Write short note: on Canonical Collection of LR(0) items.

13. (a) Discuss : Synthesized attributes.

Or

- (b) Give the examples of Syntax directed translation scheme

14. (a) Explain constructing basic blocks.

Or

- (b) Explain Calling sequence.

15. (a) Explain Input to code generator.

Or

- (b) Redundant load and store elimination.

Section C

(3 × 10 = 30)

Answer any **three** questions.

16. Difference Between DFA, NFA.
 17. Explain limitation of syntax analyzer.
 18. Write Inherited Attributes.
 19. Explain two types of type checking.
 20. Generating Code for Assignment Statements.
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R6381

Sub. Code

551551

**M.Sc. (Computer Science) DEGREE EXAMINATION,
NOVEMBER – 2021**

First Semester

ADVANCED COMPUTER NETWORK

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is OSI?
2. List the types of WLAN technologies.
3. Define an Error.
4. What is switching?
5. Define Piggybacking.
6. Define SONET.
7. What is Routing?
8. Define IP Addressing.
9. What are the functions of Transport Layer?
10. What is Flow Control?

Part B

(5 × 5 = 25)

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

11. (a) Explain 3G Mobile Phone Network.

Or

- (b) Discuss about Network Standardization.

12. (a) Explain Error Detection and Error Correction techniques.

Or

- (b) Discuss about Trunk and Multiplexing.

13. (a) Explain in detail about Bluetooth Architecture.

Or

- (b) Explain about the Elementary Data Link Layer Protocols.

14. (a) Define Routing. Explain Distance Vector Routing with examples.

Or

- (b) Explain about the Internet history.

15. (a) Discuss about Internet Transport Protocol.

Or

- (b) Distinguish between the Error Control and Flow Control.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What is TCP/IP model? Explain the functions and protocols and services of each layer? Compare it with OSI model.
17. Explain in detail about telephones Network structure.
18. Explain in detail about RFID and its Applications.
19. What are the Network Layer Design Issues? Explain.
20. Explain in detailed about the Transport Layer and its services.

R6112

Sub. Code

551301

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021.

Third Semester

Computer Science

DIGITAL IMAGE PROCESSING

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is meant by Images model?
2. Point out the importance of color transformation.
3. Define mask processing.
4. Define DCT and its inverse.
5. Mention the role of gradient operator.
6. List the types of edges.
7. What is Arithmetic coding?
8. Define lossy compression.
9. What is meant by Erosion and Dilation?
10. Define Gray-Scale Morphology.

Part B

(5 × 5 = 25)

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

11. (a) Illustrate about image processing models.

Or

- (b) Discuss about full color image processing.

12. (a) Write notes on spatial domain filters.

Or

- (b) Explain about the different order statistics smoothing filters with suitable example.

13. (a) Describe the concept of edge detection process.

Or

- (b) Write notes on edge features and their applications.

14. (a) Discuss binary and continuous tone still images compression standard in detail.

Or

- (b) Construct Huffman code for the word 'AMMA' and compute the efficiency of Huffman code.

15. (a) Write notes on various applications of Image segmentation.

Or

- (b) Illustrate how region based segmentation is performed.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. State the components of digital image processing system. Write notes on the function of each component in detail.
17. Illustrate the image restoration technique of inverse filtering. Why inverse filtering approach fails in the presence of noise?
18. Elucidate thresholding and its various methods with examples.
19. Describe transform based image compression scheme and list the different modes in JPEG compression standard.
20. Explain in detail the objective of image segmentation. Explain any one of the region based image segmentation technique in detail.

R6113

Sub. Code

551302

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Computer Science

INTERNET OF THINGS

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. State about IOT logical design
2. What is M2M?
3. Define the role of IETF in IoT.
4. Define IOT Information model.
5. What is meant by WSN Protocols?
6. Mention the components of RFID system.
7. Differentiate Web of Things and IoT.
8. State the importance of Cloud Storage.
9. What is meant by IoT device management?
10. Define Software agents.

Part B

(5 × 5 = 25)

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

11. (a) Describe about physical devices of IOT
Or
(b) Elucidate diverse motivations of switching from M2M to IOT platform.
12. (a) Explain OGC functional architecture and interactions with a neat diagram.
Or
(b) Discuss the IOT design Methodology.
13. (a) Describe the concept of IEEE 802.15.4 standard.
Or
(b) What is Internet of Things security tomography? Explain in detail layered attacker model.
14. (a) Write notes on Platform Middleware for WoT.
Or
(b) Illustrate Grid/SOA based integration with a neat diagram for Cloud of Things.
15. (a) Discuss about various application areas of IOT
Or
(b) Explain the Clustering principle of IoT.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Illustrate the design objectives of IoT architecture needed to target a horizontal system of real-world services.
17. Elucidate ETSI M2M High Level architecture with a neat diagram.

18. Describe 6LowPAN architecture with suitable diagrams.
 19. Explain Mobile Cloud Computing with neat diagrams
 20. Discuss in detail the application of Internet of Things in city automation and home automation.
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R6114

Sub. Code

551303

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021.

Third Semester

Computer Science

MACHINE LEARNING

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Discuss on Version space learning.
2. Explain decision tree splitting method.
3. Illustrate Artificial Neuron Model.
4. Explain the evaluation metrics of machine learning.
5. Brief on purpose of Gibbs algorithm.
6. Explain maximum likelihood dejection.
7. Write the use of radial basis functions.
8. What are the applications of KNN?
9. Explain Q-function assuming deterministic reward and action with example.
10. Why temporal difference learning is called bootstrapping method?

Part B

(5 × 5 = 25)

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

11. (a) Describe version spaces.

Or

- (b) Explain hill—climbing search algorithm.

12. (a) Explain the structure of neural network.

Or

- (b) Illustrate feed forward network model of back propagation.

13. (a) Describe inference in Bayesian network.

Or

- (b) Discuss the Mistake Bound model.

14. (a) Discuss linear regression with an example.

Or

- (b) Explain the role of radial basis function in separating nonlinear patterns.

15. (a) Write short notes on reinforcement learning.

Or

- (b) Explain Greedy Sequential Covering with example.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Analyse the issues in decision tree learning.
 17. Illustrate the steps of back propagation algorithm.
 18. Explain the steps of Naive Bayes classifier for calculating the probability of an event with suitable example.
 19. Analyse the features of deciding the value of “K” in KNN algorithm.
 20. Explain Sequential Covering Algorithm (Learning Propositional Rules).
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R6115

Sub. Code

551569

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2021

Third Semester

Computer Science

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. List few informed search techniques.
2. Give the structure of agent in an environment
3. Define Quantifier and its types.
4. Explain the two levels of knowledge representation.
5. Explain properties of fuzzy sets.
6. What are the different types of planning?
7. Define adaptive learning.
8. Compare production based system with frame based system.
9. Briefly discuss expert system features.
10. What is an expert system shell?

Part B

(5 × 5 = 25)

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

11. (a) Explain the necessary components to define an AI problem with an example.

Or

- (b) Illustrate steepest ascent hill climbing algorithm.
12. (a) Trace the operation of the unification algorithm on each of the following pairs of literals — f(Marcus) and f(Ceaser)

Or

- (b) Explain First-Order predicate logic with example.
13. (a) Discuss production based knowledge representation technique

Or

- (b) Discuss backward chaining algorithm with example
14. (a) Brief hierarchical planning method with an example

Or

- (b) Discuss components of a planning system.
15. (a) Explain the strategies for knowledge acquisition.

Or

- (b) Describe features of expert system.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain heuristic functions with example.
17. Explain resolution in predicate logic with suitable example.

18. Explain forward chaining algorithms.
19. Write down STRIPs-style operators corresponding to the following blocks world description.
- | | |
|---|------------------------------------|
| A | ON (A, B, S0) ^ |
| B | ONTABLE (B, S0) ^ CLEAR (A, S0) |
20. Explain the need and evolution of XOON expert system.
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R6111

Sub. Code

551563

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Computer Science

CLOUD COMPUTING

(CBCS – 2019 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What do you mean Cloud Computing?
2. Write any two benefits of Cloud Computing.
3. List the types of Clouds.
4. Give two examples for Cloud service providers.
5. Define: Virtualization.
6. What do you mean by hypervisors?
7. What is Map reduce?
8. What is the use of document storage?
9. What is CSA?
10. What is data security in Cloud?

Part B

(5 × 5 = 25)

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

11. (a) Explain about Cloud computing deployment model.

Or

- (b) Write a note on any two cloud based services.

12. (a) Distinguish between IaaS and PaaS.

Or

- (b) Explain in detail about the Windows Azure platform service.

13. (a) Write a note on advantages and disadvantages of Virtualization.

Or

- (b) Describe Storage area network.

14. (a) What is the role of Map Reduce in Cloud computing? Explain.

Or

- (b) Write a note on Non-SQL database approach.

15. (a) Describe the workflow for live streaming using multimedia cloud.

Or

- (b) Explain any two authentication mechanisms in detail.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the advantages and disadvantages of Cloud computing.
 17. Discuss the concept of compute and analytical services in detail.
 18. Explain the role of VIO server in Cloud computing.
 19. What is Service oriented Architecture? Explain.
 20. Describe the function of Cloud Security Architecture.
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