R2075

Sub. Code
551101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Computer Science

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the following objective questions by choosing the correct option.

1. Which of the following asymptotic notation says that $f(n) >= g(n)$? (CO1,K2)

   (a) O (b) Ω

   (c) σ (d) α

2. In a priority queue, two elements with same priority is processed in which manner? (CO1,K2)

   (a) FCFS (b) RR

   (c) Shortest Priority (d) Either (a) or (b)

3. Which of the following technique does not follow divide and conquer approach? (CO2,K3)

   (a) Sequential Search

   (b) Binary Search

   (c) Quick Sort

   (d) Merge Sort

4. ———————— is the space complexity of strassen's algorithm. (CO2,K3)

(a) O(n) (b) O(n/2)

(c) O(log n) (d) O(n^2)

5. Which of the following method is based on ordering paradigm? (CO3,K2)

(a) Minimum cost spanning tree

(b) Job sequencing

(c) Single source shortest path

(d) Knapsack

6. Profits and weights in knapsack problem is ———————— (CO3,K2)

(a) Positive (b) Negative

(c) Zero (d) Neutral

7. Dynamic programming is based on the principle of ———————— (CO4, K5)

(a) Greedy

(b) Optimality

(c) Divide and conquer

(d) Either (a) or (b)

8. ———————— traversal in binary search tree produces the number in ascending order. (CO4, K5)

(a) Pre order (b) Post order

(c) Level order (d) In order

9. A Hamiltonian cycle is a ———————— path along n edges of G that visits every vertex once and returns to its starting position. (CO5, K6)

(a) Round trip (b) Disconnected

(c) Connected (d) Tree

10. E–node is a ———————— node. (CO5, K6)

(a) Dead (b) Live

(c) Inactive (d) Hide

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

Answer **all** the questions not more than 500 words each.

11. (a) Discuss in detail about time and space complexity of an algorithm. (CO1,K2)

Or

(b) How will you convert infix to postfix expression? Illustrate with an example. (CO1,K2)

12. (a) Discuss in detail about quick sort. (CO2,K3)

Or

(b) Illustrate merge sort with example. (CO2,K3)

13. (a) Illustrate greedy method in detail. (CO3,K2)

Or

(b) Explain job sequencing with deadlines in detail. (CO3,K2)

14. (a) Explain the difficulties arise in dynamic programming. (CO4, K5)

Or

(b) Determine the algorithm for finding biconnected components. (CO4, K5)

15. (a) Explain backtracking method. (CO5, K6)

Or

(b) Explain in detail about graph coloring for planar graphs. (CO5, K6)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Classify the types of queues in detail. (CO1,K2)

Or

(b) List out the operations of stack in detail. (CO1,K2)

17. (a) Discover the time complexity of binary search with example. (CO2,K3)

Or

(b) Apply divide and conquer technique to solve the matrix multiplication with suitable example. (CO2,K3)

18. (a) How will you find minimum cost spanning tree using kruskal algorithm? (CO3,K2)

Or

(b) Illustrate single source shortest path problem. (CO3,K2)

19. (a) Explain travelling salesman problem in detail. (CO4, K5)

Or

(b) Explain the traversal techniques of binary search tree in detail. (CO4, K5)

20. (a) Solve 0/1 knapsack problem using branch and bound technique. (CO5, K6)

Or

(b) Elaborate least cost search in detail. (CO5, K6)

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R2076	Sub. Code
	551102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Computer Science

ADVANCED DATABASE MANAGEMENT SYSTEMS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. An attribute of one table matching the primary key of another table, is called as ———— (CO1, K2)

   (a) Foreign key

   (b) Secondary key

   (c) Candidate key

   (d) Composite key

2. In a one-to-many relationship, the entity that is on the one side of the relationship is called a(n) ———— entity. (CO1,K2)

   (a) Parent (b) Child

   (c) Instance (d) Subtype

3. If a relation scheme is in BCNF, then it is also in ———————— . (CO2, K3)

(a) First normal form

(b) Second normal form

(c) Third normal form

(d) Fourth normal form

4. Normalization of data helps in ———————— redundancy. (CO2, K3)

(a) Minimizing

(b) Maximizing

(c) Avoiding

(d) Either (a) or (b)

5. A distributed database has which of the following advantages over a centralized database? (CO3,K4)

(a) Software cost

(b) Software complexity

(c) Slow Response

(d) Modular growth

6. A transaction manager is which of the following? (CO3,K4)

(a) Maintains a log of transactions

(b) Maintains before and after database images

(c) Maintains appropriate concurrency control

(d) All of the above

7. Which classes does spatial data types in MySQL (CO4,K1)

(a) OpenGSS (b) OpenGIS

(c) ClosedGSS (d) ClosedGlS

8. Spatial databases are also known as (CO4,K1)

(a) Geodatabases

(b) Monodatabases

(c) Concurrent databases

(d) None of the above

9. A row in a relational database is (CO5, K6)

(a) Tuple (b) Attribute

(c) Instance (d) Both (a) and (b)

10. LDL stands for ————————. (CO5, K6)

(a) Legal Data Language

(b) Local Data Language

(c) Lapse Data Language

(d) Logic Data Language

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

Answer **all** the questions not more than 500 words each.

11. (a) State the advantages of DBMS over traditional file system. (CO1,K2)

Or

(b) State the difference between a candidate key and the primary key for a given relation with example. (CO1,K2)

12. (a) Define fifth normal form. Why 5NF is also called project-join normal form? (CO2,K3)

Or

(b) Classify the types of inter operation parallelism. (CO2,K3)

13. (a) Analyze the important characteristics of Distributed DBMS. (CO3,K4)

Or

(b) Discuss about the concurrency control schemes used in Distributed Database. (CO3,K4)

14. (a) Compare spatial and non spatial data types in DBMS. (CO4,K1)

Or

(b) Identify the types of spatial queries in DBMS. (CO4,K1)

15. (a) Discuss about propositional calculus in detail. (CO5, K6)

Or

(b) Discuss about predicate calculus in detail. (CO5, K6)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Draw the ER diagram for Library Management System. (CO1,K2)

Or

(b) Explain the followings terms in respect to E-R Diagram: (CO1,K2)

(i) Binary versus Ternary relationship

(ii) Weak Entity Set

(iii) Single valued or Multi valued Attributes.

17. (a) Define Boyce-Codd normal form. How does it differ from 3NF? Why is it considered a stranger form of 3NF? (CO2,K3)

Or

(b) Demonstrate the difference in Interquery parallelism and Intraquery parallelism with suitable example. (CO2,K3)

18. (a) Write a short note on 2PC. (CO3,K4)

Or

(b) List the roles and responsibilities of a transaction manager. (CO3,K4)

19. (a) Explain the characteristic and features of spatial Database. (CO4,K1)

Or

(b) Illustrate the purpose of spatial Data Structures with suitable example. (CO4,K1)

20. (a) Explain deductive database in detail. (CO5, K6)

Or

(b) What is recursive query processing? (CO5, K6)

———————

R2077	Sub. Code
	551103

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Processes on the remote systems are identified by _____. (CO1, K1)

   (a) host ID (b) host name and identifier

   (c) identifier (d) process ID

2. A process can enter into its critical section _____. (CO1, K1)

   (a) Anytime

   (b) When it receives a reply message from its parent process

   (c) When it receives a reply message from all other processes in the system

   (d) None of the mentioned

3. In distributed systems, a logical clock is associated with _____. (CO2, K1)

   (a) each instruction (b) each process

   (c) each register (d) none of the above

4. Logical extension of computation migration is _____. (CO2, K1)

(a) process migration (b) system migration

(c) thread migration (d) data migration

5. What is a stateless file server? (CO3, K2)

(a) It keeps tracks of states of different objects

(b) It maintains internally no state information at all

(c) It maintains some information in them

(d) None of the mentioned

6. What are design issues in distributed system structure? (CO3, K1)

(a) Scalability (b) Fault-tolerance

(c) Clustering (d) All of the above

7. What are the important steps followed when recovery from failure happens? (CO4, K2)

(a) Post repairing integration with main system should happen smoothly and gracefully

(b) Upon link failure both parties at end must not be notified

(c) Fault recovery system must me adjusted

(d) Failures are logged systematically

8. If timestamps of two events are same, then the events are _____. (CO4, K1)

(a) concurrent (b) non-concurrent

(c) monotonic (d) non-monotonic

9. CPU fetches the instruction from memory according to the value of (CO5, K1)

(a) program counter

(b) status register

(c) instruction register

(d) program status word

10. Which one of the property is NOT a requirement for Fault Tolerance? (CO5, K2)

(a) Fault Containments

(b) Fault Isolation

(c) Dynamic Recovery

(d) Fail Safe

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

Answer **all** the following questions not more than 500 words each.

11. (a) Summarize the Conditions of Deadlock. (CO1, K2)

Or

(b) Explain the Functions of Operating System. (CO1, K2)

12. (a) Examine Lamport's Logical clock. (CO2, K4)

Or

(b) Analyze Distributed Mutual Exclusion. (CO2, K5)

13. (a) Discuss about Design Issues in Distributed operating systems. (CO3, K4)

Or

(b) Discuss about Distributed File System. (CO3, K4)

14. (a) Discuss about recovery in concurrent systems. (CO4, K4)

Or

(b) Write in detail about Voting Protocols. (CO4, K2)

15. (a) Evaluate the Features of Android OS. (CO5, K5)

Or

(b) Discuss about Processor scheduling. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the following questions not more than 1000 words each.

16. (a) Demonstrate the types of advanced operating system. (CO1, K2)

Or

(b) Classify the Models of Deadlock. (CO1, K2)

17. (a) List out and Explain Communication Primitives. (CO2, K4)

Or

(b) Explain Distributed Mutual Exclusion. (CO2, K4)

18. (a) Explain in detail about Distributed shared memory. (CO3, K4)

Or

(b) List out about Distributed Scheduling in Distributed Operating system. (CO3, K4)

19. (a) Discuss the fault tolerance in distributed file systems with example. (CO4, K5)

Or

(b) Explain is two phase commit protocol in distributed system. (CO4, K4)

20. (a) Explain about Threads. (CO5, K4)

Or

(b) Discuss in detail about Memory Management in Distributed operating system. (CO5, K5)

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R2078

Sub. Code
551104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct options.

1. Which of the below is not a valid design pattern? (CO1, K1)

   (a) Singleton (b) Factory

   (c) Command (d) Java

2. Which design pattern suggests multiple classes through which request is passed and multiple but only relevant classes carry out operations on the request? (CO1, K1)

   (a) Singleton pattern

   (b) Chain of responsibility pattern

   (c) State pattern

   (d) Bridge pattern

3. Which of the following is a part of the Java Collections Framework? (CO2, K2)

   (a) ArrayList (b) Array

   (c) int [ ] (d) String

4. What are the implementation classes of the Map interface? (CO2, K2)

(a) HashMap (b) Linked HashMap

(c) TreeMap (d) All of above

5. Which of these methods can be used to output a string in an applet? (CO3, K4)

(a) display() (b) print()

(c) drawString() (d) transient()

6. Which method is called only once during the run time of your applet? (CO3, K4)

(a) stop() (b) paint()

(c) init() (d) destroy()

7. A ———— is a type of object that organizes components in a container. (CO4, K3)

(a) Event adapter (b) Event Handler

(c) Layout manager (d) Grid Manager

8. Which of these methods is a part of Abstract Window Toolkit (AWT)? (CO4, K3)

(a) display() (b) paint()

(c) drawString() (d) transient()

9. A ———— control is a dialogue window that allows the user to pick a file? (CO5, K5)

(a) JChoosFile (b) JFilefield

(c) JFile (d) JFileChooser

10. ———— are classes that act as a connection point between event listeners and event sources? (CO5, K5)

(a) Event adapters (b) Events Handler

(c) Event listener (d) Jevent

Part B (5 × 5 = 25)

Answer **all** the following questions not more than 500 words each.

11. (a) Discuss about Factory Method Pattern. (CO1, K1)

Or

(b) Summarize about Template Pattern. (CO1, K1)

12. (a) Briefly Explain Array List class. (CO1, K2)

Or

(b) Give outline about Linked Hash Set class. (CO1, K2)

13. (a) Illustrate Applet life cycle in brief. (CO2, K4)

Or

(b) Explain in detail about Passing Values through Parameters with example. (CO2, K4)

14. (a) Discuss about Swing component classes. (CO3, K3)

Or

(b) Explain AWT Graphics classes in brief. (CO3, K3)

15. (a) Illustrate JDBC architecture. (CO3, K5)

Or

(b) Explain in brief about Working with Database Metadata. (CO3, K5)

Part C (5 × 8 = 40)

Answer **all** the following questions not more than 1000 words each.

16. (a) Write short notes on (CO1, K1)

(i) Prototype Pattern

(ii) Singleton Pattern

Or

(b) Write short notes on (CO1, K1)

(i) Proxy Pattern

(ii) Decorator Pattern

17. (a) Discuss about Map interface. (CO3, K2)

Or

(b) Explain about Comparator interface. (CO3, K2)

18. (a) Discuss about Applets. (CO2, K4)

Or

(b) Illustrate about GUI Interfaces. (CO2, K4)

19. (a) Explain about Event Handling. (CO3, K3)

Or

(b) Explain about Swing component classes. (CO3, K3)

20. (a) Illustrate JDBC Classes and Interfaces. (CO4, K5)

Or

(b) Explain the steps of Database Access with MySQL in Java. (CO4, K5)

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R2079

Sub. Code
551502

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

First Semester

Computer Science

Elective – MOBILE APPLICATION DEVELOPMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct options.

1. Why is mobile development considered challenging? (CO1, K1)
   (a) Limited desktop support
   (b) Consistency in screen sizes
   (c) Hardware limitations and diverse OS
   (d) Single programming language for all platform
2. Which technology is primarily use for the frontend development of a mobile web app? (CO1, K1)
   (a) Java
   (b) Swift
   (c) HTML, CSS and JavaScirpt
   (d) Kotlin
3. What is an activity in android _____ (CO2, K2)
   (a) Android class
   (b) Android package
   (c) A single screen in an application with supporting java code
   (d) All of above

4. The full form of APK is _____ (CO2, K2)
   (a) Android Package Kit
   (b) Android Page Kit
   (c) Android Phone Kit
   (d) All of above

5. Which of the following is a default UI property in IOS _____ (CO3, K4)
   (a) assign (b) atomic
   (c) non - atomic (d) none of the above

6. GCM in android stands for _____ (CO3, K4)
   (a) Google Cloud Messaging
   (b) Google Count Messaging
   (c) Google Center Messaging
   (d) None of the above

7. Appcelerator Titanium was first introduced in _____. (CO4, K3)
   (a) 2002 (b) 2008
   (c) 2012 (d) 2006

8. Which of the following tools can be used to build PhoneGap applications? (CO4, K3)
   (a) Visual Studio (b) Xcode
   (c) Eclipse (d) All of the above

9. What is Mono _____ (CO5, K5)
   (a) Testing tool
   (b) Web development tool
   (c) Mobile app development tool
   (d) None of the above

10. When the action begins and becomes visible to the user, this process is known as _____ (CO5, K5)
   (a) onStart (b) onCreate
   (c) onResume (d) onRestrat

Part B (5 × 5 = 25)

Answer **all** the following questions not more than 500 words each.

11. (a) Discuss about Cost development. (CO1, K1)

Or

(b) Write the mobile applications. (CO1, K1)

12. (a) Discuss about target Android. (CO2, K2)

Or

(b) Summarize about Connecting to the Google play. (CO2, K2)

13. (a) What are the tools need for IOS development? Explain it. (CO3, K4)

Or

(b) Explain in detail about Windows phone things. (CO3, K4)

14. (a) Discuss about Titanium to the markets. (CO4, K3)

Or

(b) Explain Phone Gap Project. (CO4, K3)

15. (a) Illustrate the Mono Frame work. (CO5, K5)

Or

(b) Explain in brief about Mono features. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the following questions not more than 1000 words each.

16. (a) Elaborately discuss about mobile Myths third - party frameworks. (CO1, K1)

Or

(b) Discuss about marketing in Mobile application development. (CO1, K1)

17. (a) Discuss about Android supports. (CO2, K2)

Or

(b) Develop the Derby app in Android. (CO2, K2)

18. (a) Discuss about Hello world App. (CO3, K4)

Or

(b) Discuss about distribution in windows development. (CO3, K4)

19. (a) Explain about Getting the Tools you need. (CO4, K3)

Or

(b) Difference between Phone Gap and HTML 5. (CO4, K3)

20. (a) Discuss getting to know Mono develop. (CO5, K5)

Or

(b) Explain the building the Derby App with Mono. (CO5, K5)

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R2080

Sub. Code
551301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Computer Science

ADVANCED WEB TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which of the following is not a web component element? (CO1, K2)

   (a) <shadow> (b) <menu>

   (c) <content> (d) <element>

2. What is the JavaScript keyword used to define a function? (CO1, K2)

   (a) var (b) function

   (c) let (d) const

3. The practice of creating objects based on predefined classes is often referred to as ————————. (CO2, K1)

   (a) class creation

   (b) object creation

   (c) object instantiation

   (d) class instantiation

4. Which method rolls back the present transaction? (CO2, K2)

(a) commit() (b) undo()

(c) mysqli_rollback() (d) rollback()

5. How many types of tags are there in an XML document? (CO3, K1)

(a) 3 (b) 4

(c) 5 (d) 6

6. Ajax sends data to a web server ———————— (CO3, K1)

(a) before loading the page

(b) in the background

(c) with reloading the page

(d) all of the above

7. Which node module is used for zip an unzip functionality? (CO4, K2)

(a) ZLIB (b) buffer

(c) binary (d) none of the above

8. Which of the following is used to create and manage web sockets in Node.js? (CO4, K2)

(a) socket.io (b) websockets.js

(c) ws (d) All of the above

9. Module created by using Angular JS function is known as ———————— (CO5, K1)

(a) module() (b) mod()

(c) Angular module() (d) mdl()

10. Which angular module is loaded by default? (CO5, K2)

(a) ng (b) ng – app

(c) n.g (d) new

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss in detail about Document Object Model. (CO1, K4)

Or

(b) Enumerate the merits of CSS over html and explain various types of CSS. (CO1, K3)

12. (a) How to create a class in PHP? Explain it. (CO2, K2)

Or

(b) How to access a Database? Explain it. (CO2, K2)

13. (a) Illustrate the basic structure of an XML. (CO3, K3)

Or

(b) Outline the limitations of AJAX technology. (CO3, K4)

14. (a) Explain the process involved in adding work to the event queue. (CO4, K5)

Or

(b) Illustrate some examples of readable and writable stream. (CO4, K4)

15. (a) Define AngularJS and what its key features are. (CO5, K2)

Or

(b) Explain the auto bootstrap process. (CO5, K5)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain the HTML table with example program. (CO1, K5)

Or

(b) Explain the way in which Java Script handles arrays with example. (CO1, K5)

17. (a) Explain the predefined and user defined functions in PHP with an example. (CO2, K5)

Or

(b) Explain database connectivity in PHP with reference to MYSQL. (CO2, K5)

18. (a) Explain the procedure for validating XML documents. (CO3, K5)

Or

(b) Discuss in detail about AJAX web application model. (CO3, K4)

19. (a) Elaborately discuss the implementation of HTTP clients and servers in node.JS (CO4, K4)

Or

(b) Develop an application to demonstrate file upload process in Node.JS. (CO4, K3)

20. (a) Discuss the advantages and disadvantages of AngularJS. (CO5, K4)

Or

(b) Discuss about the parent communication and child communication in AngularJS. (CO5, K4)

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R2081	Sub. Code
	551302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Computer Science

IOT AND ROBOTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. How many numbers of the element in the open IoT architecture. (CO1, K1)

   (a) 4 (b) 5

   (c) 6 (d) 7

2. IoT devices are naturally vulnerable to _____ threats. (CO1, K1)

   (a) Sensors (b) Heterogeneity

   (c) Security (d) Connectivity

3. What does the term "Thing" refer to in IoT _____ (CO2, K2)

   (a) A concept

   (b) Any object that can be connected to the internet

   (c) A specific type of software

   (d) Internet services

4. Which layer in the IoT architecture is responsible for data collection? (CO2, K2)

(a) Perception Layer

(b) Network Layer

(c) Application Layer

(d) Business Layer

5. ———————— software supporting integration binds all system devices to create body of IoT system. (CO3, K1)

(a) Real time analytics

(b) Data collection

(c) Device integration

(d) Real time collection

6. A ———————— is an established set of rules that determines how data is transmitted between different device in the same network. (CO3, K1)

(a) Network connection

(b) TCP / IP protocol

(c) Network protocol

(d) TCP Protocol

7. When was the first numerically controlled machine tool developed? (CO4, K2)

(a) 1947 (b) 1952

(c) 1999 (d) 1879

8. A simple mechanical arm is an example of which generation of robots? (CO4, K2)

(a) First generation

(b) Second generation

(c) Third generation

(d) Fourth generation

9. The surface of the workspace describes a ————————. (CO5, K2)

(a) Work surface (b) Work envelope

(c) Work load (d) Work place

10. The work volume of articulate manipulator configuration is of which shape? (CO5, K2)

(a) Cylindrical (b) Cuboidal

(c) Spherical (d) Pyramid

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss in detail about Genesis of IOT. (CO1, K4)

Or

(b) Discuss about a simplified IoT architecture. (CO1, K4)

12. (a) Define Smart Objects? Explain it. (CO2, K3)

Or

(b) Explain the Physical Layer. (CO2, K5)

13. (a) What are the key advantages of Internet Protocol? Explain it. (CO3, K3)

Or

(b) Explain about IP versions. (CO3, K5)

14. (a) Explain the automation about robotics. (CO4, K5)

Or

(b) Discuss the history of robotics in industries. (CO4, K4)

15. (a) Explain work volume in robotics. (CO5, K5)

Or

(b) List out the robotics application. (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain about projections on the potential impact of IoT. (CO1, K5)

Or

(b) Explain the core IoT functional stack. (CO1, K5)

17. (a) Explain the IoT access technologies. (CO2, K5)

Or

(b) Write the MAC Layer architecture. (CO2, K5)

18. (a) Explain the constrained nodes in IoT. (CO3, K5)

Or

(b) Discuss in detail about profiles and compliances. (CO3, K4)

19. (a) Explain in detail about market and future prospectus in robotics. (CO4, K5)

Or

(b) Discuss in detail about robot anatomy. (CO4, K4)

20. (a) Discuss the control systems and dynamic process in robotics. (CO5, K4)

Or

(b) Discuss about the robotic sensors. (CO5, K4)

R2082

Sub. Code
551303

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Computer Science

DATA ANALYTICS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Data analysis is a process of ————————. (CO1, K1)

   (a) Inspecting data (b) cleaning data

   (c) transforming data (d) All of the above

2. Which of the following is not a major data analysis approaches? (CO1, K2)

   (a) Data Mining

   (b) Predictive Intelligence

   (c) Business Intelligence

   (d) Text Analytics

3. Which of the following characteristic of big data is relatively more concerned to data science ———————— ? (CO2, K2)

   (a) Velocity (b) Variety

   (c) Volume (d) None of the above

4. Which data collection method involves gathering data by directly interacting with subjects or participants? (CO2, K2)

(a) Surveys (b) Observations

(c) Experiments (d) Sampling

5. Which method is commonly used to estimate the parameters in a linear regression model? (CO3, K2)

(a) Maximum likelihood estimation

(b) Method of moments

(c) Ordinary least squares

(d) Bayesian inference

6. What is the primary goal of rule induction in data science? (CO3, K2)

(a) To cluster similar points

(b) To discover useful patterns an relationships in data

(c) To reduce the dimensionality of data

(d) To visualize data in an effective manner

7. Which type of learning paradigm does competitive learning fall under? (CO4, K2)

(a) Supervised Learning

(b) Unsupervised Learning

(c) Reinforcement Learning

(d) Semi - supervised Learning

8. In a fuzzy decision tree, what does a fuzzy set represent (CO4, K1)

(a) A single decision path in the tree

(b) A collection of crisp, distinct data points

(c) A range of values with varying degrees of membership

(d) A hard boundary between classes

9. Which of the following is a characteristics of data streams ————————. (CO5, K2)

(a) Data is finite and static

(b) Data arrives continuously and rapidly

(c) Data is always structured

(d) Data can be processed only once

10. RTAP systems are designed to handle which type of data? (CO5, K1)

(a) Historical data (b) Structured data only

(c) Streaming data (d) Archived data

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

Answer **all** the questions not more than 500 words each.

11. (a) Discuss in detail about Structures. (CO1, K4)

Or

(b) Discuss about a current analytical architecture. (CO1, K4)

12. (a) Explain the Data analytics life cycle. (CO2, K5)

Or

(b) Explain the communicate results. (CO2, K5)

13. (a) What is regression modeling? Explain it. (CO3, K3)

Or

(b) Explain about nonlinear dynamics. (CO3, K5)

14. (a) Explain the competitive learning. (CO4, K5)

Or

(b) Discuss the fuzzy decision tree. (CO4, K3)

15. (a) Explain stream data model architecture. (CO5, K5)

Or

(b) Discuss about filtering streams. (CO5, K4)

Part C $(5 \times 8 = 40)$

Answer **all** the questions not more than 1000 words each.

16. (a) Explain about analyst perspective. (CO1, K5)

Or

(b) Discuss the BI vs Data Science. (CO1, K3)

17. (a) Explain the Data Discovery. (CO2, K5)

Or

(b) Explain the Model planning and Model building. (CO2, K5)

18. (a) Write the Bayesian Modeling. (CO3, K4)

Or

(b) Discuss in detail about Support Vector Methods. (CO3, K4)

19. (a) Explain in detail about Principal Component Analysis. (CO4, K5)

Or

(b) Discuss in detail about Stochastic search methods. (CO4, K4)

20. (a) Discuss the RTAP applications. (CO5, K4)

Or

(b) Discuss about the robotic sensors. (CO5, K4)

R2083	Sub. Code
	551304

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Computer Science

DEEP LEARNING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. What is the objective of perceptron learning ———— (CO1, K2)

   (a) Class identification

   (b) Weight adjustment

   (c) Adjust weight along with class identification

   (d) None of the mentioned

2. Generalization feature of a multilayer feed forward network depends on factors ———— (CO1, K2)

   (a) Architectural details

   (b) Learning rate parameter

   (c) Training samples

   (d) All of the mentioned

3. What is the primary purpose of a Convolutional Neural Network ———————— (CO2, K2)

(a) Object detection

(b) Image classification

(c) Text generation

(d) Reinforcement learning

4. Which of the following are common uses of RNNs ———————— (CO2, K2)

(a) Provide a caption for images

(b) Detect fraudulent credit — card transaction

(c) Businesses help securities traders to generate analytic reports

(d) All of the above

5. What is the objective of back propagation algorithm ———————— (CO3, K2)

(a) To develop learning algorithm for multilayer feed forward neural network

(b) To develop learning algorithm for single layer feed forward neural network

(c) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly

(d) None of the mentioned

6. What do the gradients of back propagation compute ———— (CO3, K2)

(a) Profit Function

(b) Loss Function

(c) Positive Function

(d) Negative Function

7. Which layer type is typically used to capture sequential dependencies in an RNN ———— (CO4, K2)

(a) Input layer

(b) Hidden layer

(c) Output layer

(d) Activation layer

8. How many inputs are present in one LSTMM unit at each time step ———— (CO4, K1)

(a) 1 (b) 2

(c) 3 (d) 4

9. In the context of medical imaging, what is the primary goal of image segmentation using deep learning? (CO5, K1)

(a) Object detection

(b) Feature extraction

(c) Tumor localization

(d) Image enhancement

10. Which component of LSTM networks helps in controlling the flow of information through the cell? (CO5, K2)

(a) Input gate (b) Output gate

(c) Forget gate (d) Memory cell

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) What are the basic components of a neural network? Explain it. (CO1, K3)

Or

(b) What is back propagation? Explain it. (CO1, K3)

12. (a) Write an example function for convolution operation and explain in detail. (CO2, K4)

Or

(b) Discuss about the application of CNN. (CO2, K4)

13. (a) What is Gradient Descent? Explain it. (CO3, K3)

Or

(b) Explain about autoencoders. (CO3, K5)

14. (a) Illustrate Bidirectional RNNs. (CO4, K4)

Or

(b) Describe the following. (CO4, K3)

(i) Long Short — Term memory

(ii) Other Gated RNNs

15. (a) Explain Object detection. (CO5, K5)

Or

(b) Discuss about Dialogue generation with LSTMs. (CO5, K4)

Part C ($5 \times 8 = 40$)

Answer **all** the questions not more than 1000 words each.

16. (a) Develop a Deep Feed Forward network and explain. (CO1, K3)

Or

(b) Discuss the perception algorithm. (CO1, K3)

17. (a) Discuss about CNN Architecture. (CO2, K3)

Or

(b) Discuss Recurrent Neural Network in detail. (CO2, K3)

18. (a) Explain the Multilayer Perceptron. (CO3, K5)

Or

(b) Discuss in detail about Empirical Risk Minimization. (CO3, K4)

19. (a) Describe Deep Recurrent Networks in detail. (CO4, K4)

Or

(b) Explain optimization for Long Term dependencies. (CO4, K5)

20. (a) Write the concept of image segmentation. (CO5, K4)

Or

(b) Discuss the case study of parsing and sentiment. (CO5, K4)

———————

R2084

Sub. Code
551507

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2024

Third Semester

Computer Science

Elective : CYBER SECURITY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. The primary motive behind, cyber, extortion, a common form of cybercrime ———— (CO1, K1)

   (a) Gaining notoriety (b) Seeking revenge

   (c) Financial gain (d) Political activism

2. The term for a cybercrime in which criminals use deceptive emails or website to trick individuals into revealing personal information ———— (CO1, K1)

   (a) Phishing (b) Spamming

   (c) Hacking (d) Viral marketing

3. Which of the following is not a step followed by cyber – criminals in data breaching ———— (CO2, K2)

   (a) Exfiltration

   (b) Research and info - gathering

   (c) Attack the system

   (d) Fixing the bugs

4. Botnets are managed by ———————— (CO2, K1)

(a) Bot-holders (b) Bot-herders

(c) Bot-trainers (d) Bot-Creators

5. Mobile phone OS contains APIs that may be ———————— attack. (CO3, K2)

(a) Useful for (b) Vulnerable to

(c) Easy to (d) Meant for

6. Which among the has the strongest wireless security ———————— (CO3, K2)

(a) WEP (b) WPA

(c) WPA2 (d) WPA3

7. ———————— is a popular tool used for discovering networks as well as in security auditing. (CO4, K2)

(a) Ettercap (b) Mettasploit

(c) Nmap (d) Burp sult

8. During a DoS attack, the regular traffic on the target ———————— will be either dawdling down or entirely interrupted. (CO4, K2)

(a) network (b) system

(c) website (d) router

9. In which year India's IT Act came into existence ———————— (CO5, K2)

(a) 2000 (b) 2001

(c) 2002 (d) 2003

10. Cracking digital identity of any individual or doing identity theft, comes under ———————— of IT Act. (CO5, K1)

(a) Section 65 (b) Section 66

(c) Section 68 (d) Section 70

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Discuss the classifications of cybercrimes. (CO1, K3)

Or

(b) Explain a Global Perspective on Cybercrimes. (CO1, K5)

12. (a) Explain the criminal plan the attacks. (CO2, K5)

Or

(b) Discuss about the cloud computing. (CO2, K3)

13. (a) Discuss the credit card frauds in mobile computing. (CO3, K3)

Or

(b) Explain about organizational measures for handling mobile. (CO3, K5)

14. (a) Explain about Proxy servers. (CO4, K5)

Or

(b) Illustrate Steganography. (CO4, K4)

15. (a) Explain the Indian context of cyber laws. (CO5, K5)

Or

(b) Discuss about Career paths in cyber security. (CO5, K3)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 words each.

16. (a) Explain the Legal perspectives of cyber crime. (CO1, K5)

Or

(b) Discuss the survival mantra for Netizens. (CO1, K4)

17. (a) Illustrate the social engineering. (CO2, K4)

Or

(b) Explain the fuel of cyber-crime. (CO2, K5)

18. (a) Describe the security challenges posed by mobile devices. (CO3, K4)

Or

(b) Discuss in detail about security policies in mobile computing era. (CO3, K4)

19. (a) Discuss in detail about password cracking. (CO4, K5)

Or

(b) Explain DoS, DDoS attacks. (CO4, K5)

20. (a) Illustrate the amendments to the Indian IT Act. (CO5, K4)

Or

(b) Discuss about the IT Security Organization. (CO5, K4)

———————