

Enrol. No. S R H U

31/12/24
Regn. No. D D

END SEMESTER EXAMINATION, DECEMBER- 2024

MCA Semester - III

Course Name: Computer Graphics

Course Code: MCA234

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Attempt all.

(10×2=20)

QN	Questions	CO	PO
a.	What are the various presentation tools?	5	1
b.	What is the Z-buffer in 3D graphics?	4	1
c.	What is an image resolution?	1	1
d.	What is a GPU memory layout?	2	1
e.	What is an image buffer?	1	1
f.	What is transformation?	3	1
g.	What is aliasing?	3	1
h.	Explain multimedia?	5	1
i.	Explain any two multimedia file formats?	5	1
j.	What are the 3 components of illumination?	3	1

Q.2. Attempt any five out of Seven.

(5×4=20)

QN	Questions	CO	PO
a.	Explain computer graphics and its applications?	1	1,2
b.	What is orthographic projection, and when is it used?	4	1,2
c.	Write notes on Phong illumination model with working?	3	1
d.	How does 3D translation, scaling affect the position and size of objects in a scene?	3	1
e.	What is a polygon mesh, and why is it important in 3D modeling?	2	1,2
f.	Write short notes on computer graphics animation?	5	1,2
g.	Write short notes on clipping operations.	3	1

Q.3. Attempt any three out of four.

(3×10=30)

QN	Questions	CO	PO
a.	Attempt all. (5+5) (i) Differentiate between Bitmap graphics and vector graphics? (ii) Differentiate Orthographic and Oblique Projections. Give classification for both projections.	1,4	1,2
b.	Attempt all. (5+5) (i) What is Animation? How does computer animation differ from computer graphics? (ii) What are the shortcomings of DDA line drawing algorithm? How are they removed in Bresenham's algorithm?	5,1	1,2
c.	Attempt all. (5+5) (i) Write short notes on Polygons, Curved Lines, Quadratic surfaces. (ii) Explain in detail Gouraud shading.	3	1
d.	Attempt all. (5+5) (i) Write short notes on Bezier curve and spline. (ii) Explain scan line method for visible surface detection?	4	1,2

Q.4. Attempt any two out of three.

(2×15=30)

QN	Questions	CO	PO
a.	(i) Explain the following: (a) Direct View Storage Tubes (b) Flat Panel Displays (c) Liquid Crystal Displays. (ii) Explain in detail about the properties of light?	1	2
b.	(i) Write about Cohen-Sutherland line clipping algorithm with an example. (ii) Explain about 3D object representation.	3	1
c.	(i) Compare and contrast between RGB and CMY color models. (ii) Differentiate parallel and perspective projections and derive their projection matrices.	3,4	1,2

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END SEMESTER EXAMINATION, DECEMBER- 2024
MCA Semester – III/ B. Sc. (Hons.) in DS Semester - V

**Course Name: Cloud Computing/
Introduction to Cloud Computing**

Course Code: MCE231/DDS352

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Attempt all.

(10×2=20)

a.	Name three models of Cloud Computing.	1	1
b.	What are the advantages of cloud computing?	1	1
c.	What is IAAS?	1	1
d.	What is IAM?	2	1
e.	Define Cloud Computing.	2	2
f.	What is the name of Microsoft's Cloud Service?	3	1
g.	What is full form of PaaS?	3	3
h.	What is S3?	3	1
i.	Name different Business Benefits of Cloud Computing.	4	1
j.	What is the full form of AWS?	5	2

Q.2. Attempt any five out of Seven.

(5×4=20)

a.	What are the security challenges in cloud computing	2	2
b.	List disadvantage of cloud computing. Elaborate.	1	3
c.	Explain about 3 cloud models.	3	1
d.	Explain in detail the various aspects for the need of virtualization in cloud computing	1	2
e.	Discuss in brief about the cloud computing and data security risk.	4	1
f.	What is the need for Migration in the cloud?	1	2
g.	State any three essential benefits of cloud computing.	5	1

Q.3. Attempt any three out of four.

(3×10=30)

a.	Can You share some best practices for securing customer data on the cloud?	3	2
b.	Describe 3 top / Key Learnings from the Siemens Cloud Case Study	2	3
c.	Describe the infrastructure requirements for Cloud computing	3	2
d.	Describe the cloud supplychain (C-SC).	4	3

Q.4. Attempt any two out of three.

(2×15=30)

a.	In the IBM Case Study, what is the single biggest factor in determining the success of the company i.e. how do we, as consumers, know how well the company is doing?	2	2
b.	In the IBM Case Study, what are Microservices? How did they help American Airlines achieve what they did in terms of transformation?	3	3
c.	What are the key methods to secure a cloud environment?	4	3

END SEMESTER EXAMINATION, DECEMBER- 2024**MCA Semester - III****Course Name: (Dot). Net Frame Work & C#****Course Code: MCA233****Time allotted: 03 Hours****Max. Marks: 100****Note: Read all the instructions carefully.****Q. 1. Attempt all questions. All carry equal marks.****(2 x 10 = 20)**

S.No	Questions	CO	PO
a.	C# does not support method overloading. (T/F).	1	1
b.	The C# operator used for checking if two values are equal is _____.	2	2
c.	Is C# a compiled or interpreted language?	3	2
d.	The C# keyword used to explicitly call the base class constructor is _____.	2	1
e.	How do you define a method in C# without a return type?	1	1
f.	The 'params' keyword in C# can only be used with arrays. (T/F).	2	1
g.	The 'DateTime.Now' property in C# returns the current date and time. (T/F).	2	1
h.	The 'finally' block in a try-catch-finally statement always executes, regardless of whether an exception is thrown or not. (T/F).	2	1
i.	The default access modifier for a class in C# is _____.	3	1
j.	What does 'GC' stand for in C#?	2	1

Q. 2. Attempt any 5 questions. All carry equal marks**(5 x 4 = 20)**

S.No	Questions	CO	PO
a.	Explain different services available with .NET framework.	1	1
b.	Explain the different data types in C# by drawing a suitable diagram.	1	1
c.	Discuss the different access modifiers used in C# in detail.	1	1
d.	What is garbage collection? How it is done?	3	1
e.	Describe details about the Windows forms Applications and windows services?	2	2
f.	Discuss about the collections with an example.	4	1
g.	Describe details about Structures and Enumerations with an example?	4	2

Q. 3. Attempt any 3 questions. All carry equal marks.**(10 x 3 = 30)**

S.No	Questions	CO	PO
a.	i. Construct a jagged array. (3) ii. What is the use of for each in C#? Give an example. (3) iii. Classify the categories of flow control in C#. (4)	1	1
b.	i. List some of the new features that are unique to C# language. (3) ii. Explain the Array & Types of Array and lists with an example? (3) iii. Differentiate between testing and debugging. (4)	2	2
c.	i. Develop a program to implement the operating overloading with an example program. (3) ii. How does an array list differ from array? (3) iii. List and Discuss the types of inheritance with example. (4)	3	3
d.	i. What is array? Discuss array class with suitable example. (3) ii. Summarize the different types of type casting. (3) iii. Explain in detail about creation generic classes and function with example program. (4)	3	3

Q. 4. Attempt any 2 questions. All carry equal marks.**(15 x 2 = 30)**

S.No	Questions	CO	PO
a.	i. What is the role of ref, params and out in C#? Where we can use in C# programming? Give examples. (7) ii. What is method overriding? Explain with the help of examples. (8)	1	1
b.	i. Write a C# code to compare two strings using "Equals" Method. (7) ii. Write the program to sort the number in descending order. (8)	2	2
c.	i. Distinguish between strings and string builder classes in C#. (7) ii. Write a C# program to find the factorial of given "N" number. (8)	3	3

END SEMESTER EXAMINATION, DECEMBER- 2024
MCA Semester - III

Course Name: Compiler Design**Course Code: MCA232****Time allotted: 03 Hours****Max. Marks: 100****Note: Read all the instructions carefully.****Q.1. Objectives Type****(Very short/ Short Answer, MCQ, One-liners, Fill in the Blank, True/ False) Attempt all. (10×2=20)**

	CO	PO
a. Define Compiler.	1	1
b. Name some compiler construction tools.	2	1
c. Explain JIT Compiler.	1	1
d. Define ambiguous grammar.	1	1
e. Explain YACC.	2	2
f. Mention types of LR parsers.	2	2
g. Define handle pruning.	2	1
h. Define flow graph.	2	2
i. Give the applications of DAG.	2	1
j. Differentiate between Compiler and Interpreter.	2	2

Q.2. Short notes / Short Answer Type (Attempt any five out of Seven)**(5×4=20)**

a. Briefly explain parts of the compilation.	2	2
b. Differentiate between synthesized attributes and inherited attributes.	2	1
c. Explain bootstrapping in compiler design.	2	1
d. Discuss the problems with top-down parsing.	2	1
e. Explain type checking, and why is it important?	2	2
f. Explain dead code elimination with a suitable example.	2	2
g. Define back-patching.	3	1

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Q.3. Structured Question (Attempt any three out of four)

3×10=30)

a.	(i) Define Peephole optimization with an example. (ii) List the characteristics of peephole optimization.	5	2
b.	(i) Explain three-address codes, and its applications. (ii) Differentiate between Quadruple, Triple, and Indirect Triple.	2	2
c.	(i) Differentiate token, pattern, lexeme. (ii) Explain in detail about input buffering.	2	1
d.	(i) Explain the sequence of stack allocation process for a function call. (ii) Define activation record and list out the fields in it.	3	2

Q.4. Long Answer / Essay type (Attempt any two out of three)

(2×15=30)

a.	(i) What is left recursion? Write rules to eliminate left recursion. (ii) Define operator precedence grammar. (iii) Explain the error recovery in predictive parsing.	3	2
b.	Consider the following grammar- $E \rightarrow E+T/T$ $T \rightarrow TF/F$ $F \rightarrow F*/a/b$. (i) Calculate CLOSURE Set LR (0). (ii) Draw DFA (iii) Is it SLR (1) or not?	3	2
c.	Consider the following grammar- $S \rightarrow Aa/bAc/dc/bda$ $A \rightarrow d$ (i) Compute LR (1) sets of items. (ii) Draw transition digram. (iii) Check whether the grammar is LALR (1)	3	2

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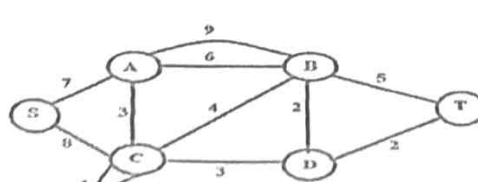
END SEMESTER EXAMINATION, DECEMBER - 2024**MCA Semester – III/ BCA Semester -III****Course Name: Design and Analysis of Algorithms Course Code: MCA231/BC234T****Time allotted: 03 Hours****Max. Marks: 100****Note: Read all the instructions carefully.****Q.1. Attempt All questions. Each carries equal marks.****(10X2=20)**

a.	Define time complexity.	CO1	PO1
b.	DFS stands for.....	CO2	PO1
c.	What is Heap?	CO2	PO2
d.	AVL stands for.....	CO3	PO1
e.	Define binary search tree.	CO2	PO2
f.	What is Big-O notation?	CO1	PO2
g.	Is $3n^2$ is $O(n)$? Yes/ No	CO1	PO2
h.	Define tree.	CO2	PO1
i.	Average case time complexity is denoted by.....	CO1	PO2
j.	What is lower bound concept?	CO5	PO2

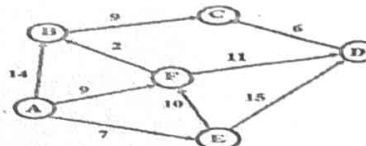
Q.2. Attempt any five questions. Each carries equal marks**(5X4=20)**

a.	Define Algorithm and its characteristics. Explain asymptotic notations.	CO1	PO2
b.	Explain the divide and conquer strategy for solving the problem. What is the worst-case time complexity of Quick Sort.	CO2	PO1
c.	Explain merge sort with suitable example.	CO2	PO2
d.	Explain binary search tree with suitable example.	CO2	PO2
e.	Discuss greedy method. Explain multistage graph problem with example.	CO3	PO3
f.	What is Dynamic programming? Explain traveling salesman problem with an example.	CO4	PO1
g.	Explain the 0/1 knapsack problem using suitable example.	CO5	PO2

Q3. Attempt any three questions. Each carries equal marks.**(3X10=10)**

a.	Find the optimal solution for the following instance using greedy method. No of objects= 8 Knapsack capacity = 25 Profits (p1, p2, p3, p4, p5, p6, p7, p8) = (10, 5, 15, 7, 6, 18, 3, 40) Weights (w1, w2, w3, w4, w5, w6, w7, w8) = (2, 3, 5, 7, 1, 4, 1, 5)	CO3	PO1
b.	Find MST (Minimum Spanning Tree) for the given graph using Prim's algorithm. Starting vertex is A. 	CO3	PO3

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c.	For the given graph find the shortest path from A to C using Dijkstra algorithm.	CO3	PO5
			
d.	Define max heap and min heap. Write an algorithm for Heapify () a tree. Build Max heap from the following numbers: 7, 9, 34, 6, 10, 3, 15, 25, 40	CO4	PO2

Q4. Attempt any two questions. Each carries equal marks.

(2X15=30)

a.	Explain the divide and conquer strategy for solving the problem. What is the worst-case time complexity of Quick Sort? For the given set of elements. Show all the steps for the execution of Quick Sort on the following list of elements: 20, 10, 40, 30, 12, 50, 5, 25, 35, 2	CO2	PO2
b.	Define AVL tree. What is the balance factor in the AVL tree? Insert the following sequence of elements in the AVL tree, starting with an empty tree: 10, 20, 15, 25, 30, 16, 35, 40, 5	CO3	PO3
c.	Obtain a set of optimal Huffman codes for a set of the seven messages (m1, m2, m3, m4, m5, m6, m7) with a relative frequency (q1, q2, q3, q4, q5, q6, q7) = (4, 5, 7, 9, 12, 18, 25). Draw the decode tree for this set of codes and write the Huffman code for each of the message.	CO4	PO2

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END SEMESTER EXAMINATION, DECEMBER - 2024
MCA Semester - III

Course Name: Machine Learning**Course Code: MCE239****Time allotted: 03 Hours****Max. Marks: 100****Note: Read all the instructions carefully.****Q.1. Objectives Type (Very short) Attempt all.****(10×2=20)**

a.	What is the primary objective of the Find-S algorithm?	CO1	PO1
b.	In the context of version spaces, what does consistency mean?	CO1	PO1
c.	Can you give an example of an application of neural networks in face recognition?	CO1	PO1
d.	List the issues in decision tree.	CO2	PO1
e.	Define KNN.	CO3	PO1
f.	What is the focus of computational learning theory?	CO5	PO1
g.	Define Genetic Concepts.	CO1	PO1
h.	What is Q concept?	CO2	PO1
i.	Write the formula for Information Gain.	CO4	PO1
j.	Differentiate between supervised and unsupervised.	CO2	PO1

Q.2. Short notes Type (Attempt any five out of Seven)**(5×4=20)**

a.	Write and explain the decision tree algorithm.	CO2	PO1,2
b.	Discuss applications of machine learning.	CO1	PO1,3
c.	Explain the steps to design a learning system.	CO3	PO1,2
d.	Explain Reinforcement Learning with example.	CO5	PO2,4
e.	Write the candidate elimination algorithm and illustrate with example.	CO1	PO1,2
f.	Define Bayesian theorem? What is the relevance and features of Bayesian theorem?	CO5	PO1,2,4
g.	Explain the concept of a Perceptron with a neat diagram.	CO2	PO1,4

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Q.3. Structured Question (Attempt any three out of four)

(3×10=30)

Q.3. Structured Question (Attempt any three out of four)							
a.	(i) Write the perspective and issues in Machine Learning (ii) Explain Types of machine learning					CO1	PO1,2
b.	Prepare a Decision trees for the following set of training examples					CO2	PO1,2,4
	Day	Outlook	Temperature	Humidity	Wind	Play Tennis	
	D1	Sunny	Hot	High	Weak	No	
	D2	Sunny	Hot	High	Strong	No	
	D3	Overcast	Hot	High	Weak	Yes	
	D4	Rain	Mild	High	Weak	Yes	
	D5	Rain	Cool	Normal	Weak	Yes	
c.	(i) Explain Bayes Optical Classifier (ii) Discuss the applications based on Bayes Classifier					CO3	PO2,3
d.	(i) Explain Analytical Learning and its applications (ii) Explain the performance metrics of machine learning					CO5	

Q.4. Long Answer type (Attempt any two out of three)

(2×15=30)

a.	i) Explain FIND-S algorithm with its Key Properties. ii) How do you design a checkers learning problem?	CO1	PO1
b.	i) Explain Q learning algorithm assuming deterministic rewards and actions? ii) Explain the Q learning concept	CO4	PO1
c.	(i) What are the capabilities and limitations of ID3? (ii) Write and Explain ID3 algorithm.	CO2	PO1,2,4
