

12/1/24

Enrol. No. S R H U

Regn. No. D D

END SEMESTER EXAMINATION, JANURARY- 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 Find-S in concept learning?	CO1	PO1
b.	What is Information gain, also write the formula for Information gain	CO2	PO1
c.	What is Q concepts	CO5	PO1
d.	How is Bayes' theorem used in concept learning?	CO2	PO1
e.	What is the main goal of learning sets of rules?	CO4	PO1
f.	What is the relationship between reinforcement learning and dynamic programming?	CO5	PO1
g.	Define Inductive Learning	CO3	PO1
h.	Define Neural Network	CO2	PO1
i.	Define EM.	CO4	PO1
j.	Differentiate between Classification and Regression	CO2	PO1

Q.2. Short notes Type (Attempt any five out of Seven)

(5×4=20)

a.	Candidate elimination algorithm	CO1	PO1
b.	Decision Tree Issues	CO2	PO1
c.	Computational Learning Theory	CO3	PO1
d.	Perfect Domain Theory	CO4	PO1
e.	Combining Inductive and Analytical Learning	CO5	PO1
f.	Define Bayesian theorem?	CO3	PO1
g.	Explain the steps to design a learning system.	CO1	PO1

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

(3×10=30)

a.	(i) Write the perspective and issues in Machine Learning	CO1	PO1
	(ii) Explain Backpropagation Networks		
	(iii) Define perceptron		
b.	(i) Discuss the design issues of Decision Learning	CO2	PO1
	(ii) Explain role of pruning in decision tree		
	(iii) Define the process of selecting the root for building the decision tree		
c.	(i) Explain Maximum Likelihood hypotheses in Bayesian learning?	CO3	PO1
	(ii) Explain Bayes Optical Classifier		
	(iii) Discuss the applications based on Bayes Classifier		
d.	(i) Explain Analytical Learning and its applications	CO4	PO1
	(ii) Explain the domain theories		
	(iii) Define Prolog-EBG		

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

(2×15=30)

a.	(i)	What is the entropy of this collection of training examples with respect to the target function classification?	CO2	PO1,2,2																																																
	(ii)	What is the information gain of Temperature attribute relative to these training examples?																																																		
<table><tr><th>Day</th><th>Outlook</th><th>Temperature</th><th>Humidity</th><th>Wind</th><th>Play Tennis</th></tr><tr><td>D1</td><td>Sunny</td><td>Hot</td><td>High</td><td>Weak</td><td>No</td></tr><tr><td>D2</td><td>Sunny</td><td>Hot</td><td>High</td><td>Strong</td><td>No</td></tr><tr><td>D3</td><td>Overcast</td><td>Hot</td><td>High</td><td>Weak</td><td>Yes</td></tr><tr><td>D4</td><td>Rain</td><td>Mild</td><td>High</td><td>Weak</td><td>Yes</td></tr><tr><td>D5</td><td>Rain</td><td>Cool</td><td>Normal</td><td>Weak</td><td>Yes</td></tr><tr><td>D6</td><td>Rain</td><td>Cool</td><td>Normal</td><td>Strong</td><td>Yes</td></tr><tr><td>D7</td><td>Overcast</td><td>Cool</td><td>Normal</td><td>Strong</td><td>Yes</td></tr></table>					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	D6	Rain	Cool	Normal	Strong	Yes	D7	Overcast	Cool	Normal	Strong	Yes
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D6	Rain	Cool	Normal	Strong	Yes																																															
D7	Overcast	Cool	Normal	Strong	Yes																																															
b.	(i)	Explain an example of an application of Genetic Algorithms.	CO3	PO1																																																
	(ii)	Explain The purpose of purpose of Hypothesis Space Search in Genetic Algorithms?																																																		
c.	(i)	Explain the Q function and Q Learning Algorithm	CO5	PO1,2,4																																																
	(ii)	Explain the concept of EM Algorithm																																																		

11/1/24

Enrol. No. S R H U

Regn. No. D D

END SEMESTER EXAMINATION, JANURARY- 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.	Explain vector graphics.	3	2
b.	Describe the concept of ambient occlusion.	2	2
c.	What is image aspect ratio?	1	2
d.	What is meant by antialiasing?	2	2
e.	What are the Input devices and Hard copy devices?	3	2
f.	Define Translation.	2	2
g.	Define Window.	1	2
h.	Define JPEG.	2	2
i.	Write the Properties of Light	3	2
j.	What is Polygon clipping	2	2

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

QN	Questions	CO	PO
a.	Write short notes on Scan line Method.	3	2
b.	Define perspective projection in 3D graphics.	2	2
c.	What is an image filter, and how does it affect image quality?	1	2
d.	What is the various representation schemes used in three dimensional object ?	2	2
e.	What are splines, and how are they used for smooth curves?	3	2
f.	How is frame rate measured in computer graphics?	2	2
g.	How are pixels represented in a computer display?	1	2

Q.3. Attempt any three out of four.

(3×10=30)

Q N	Questions	CO	PO
a.	Attempt all.(3+3+4) (i) Write short notes on any two of the following : (i) Specular Reflection (ii) Bezier Surfaces (iii) Z-Buffer Algorithm (iv) Windowing Transformations (ii) Define the terms Window and Viewport. Explain the significance of Windowing transformation. (iii) Define the following: (i) RTF (ii) JPEG (iii) TIFF (iv) MIDI (v) DIB (vi) MPEG	3	2
b.	Attempt all.(3+3+4) (i) What are geometric continuities? How do geometric continuities differ from\ parametric continuities ? Discuss each type of geometric continuity. (ii) Explain Flat Panel Displays in Computer Graphics. (iii) Draw a taxonomy tree for classification of different types of projections.	2	2
c.	Attempt all.(3+3+4) (i) Explain in detail the CMY color model. (ii) How do 'Computer graphics' differ from 'Animation' ? Discuss the basic elements of computer animation. (iii) What are Authoring tools ? What are the various types of authoring tools available ? Discuss any one of them.	1	2
d.	Attempt all.(3+3+4) (i) Why do we need the concept of shading in computer graphics ? Briefly discuss different types of shading techniques. (ii) Explain Window to Viewport transformation. (iii) Write procedure to fill polygon using Flood fill.	2	2

Q.4. Attempt any two out of three.

(2×15=30)

QN	Questions	CO	PO
a.	(i) Explain the following composite transformations (i)Traslation (ii)Rotation (ii) Differentiate between Vector scan display and Raster scan display.	3	2
b.	Write short notes on all of the following: (i) Ray Casting (ii) Authoring Tools (iii) Polygon Representation Methods (iv) Write the Mid-point Circle algorithm. Compute the coordinate points of the circle drawn with centre at (0, 0) and radius of 5 units, using the Mid-point Circle algorithm.	2	2
c.	(i) Discuss the term Windowing Transformations. Use suitable diagrams and expressions in your discussion. (ii) Using 4 bit code for nine regions, clip the lines P1, P2and P3P4given below, using Cohen Sutherland line clipping algorithm.	1	2

10/01/24

Enrol. No. S R H U

Regn. No. D D

END SEMESTER EXAMINATION, JANURARY- 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.	What is the purpose of the 'sealed' keyword in C#?	2	1
b.	C# allows the creation of structures using the 'struct' keyword. (T/F).	1	1
c.	The C# data type for holding a single Unicode character is _____.	2	1
d.	The 'throw' statement in C# is used to catch exceptions. (T/F).	3	2
e.	The 'is' keyword in C# is used for type casting. (T/F).	3	2
f.	keyword in C# is used to specify a variable number of _____ parameters.	1	1
g.	How do you define an interface in C#?	1	1
h.	C# supports pointers for direct memory manipulation. (T/F).	3	2
i.	The 'foreach' loop in C# is used to iterate over _____.	2	1
j.	How do you handle exceptions in C#?	2	1

Q. 2. Attempt any 5 questions. All carry equal marks

(5 x 4 = 20)

S.No	Questions	CO	PO
a.	What do you mean by Boxing and Unboxing? Explain with the help of examples.	1	1
b.	Explain the Array & Types of Array and lists with an example?	1	1
c.	Describe details about the Threading? With an example?	1	1
d.	How is c# better than java?	3	1
e.	What is the role of ref, params and out in C#.	2	2
f.	What is method overriding? Explain with the help of examples.	4	1
g.	Explain the .NET Framework architecture in detail.	4	2

Q. 3. Attempt **any 3** questions. All carry equal marks.

(10 x 3 = 30)

S.No	Questions	CO	PO
a.	i. Explain in detail about .net framework deployment features. (3)	1	1
	ii. Explain the advantages of packaging in .net framework. (3)		
	iii. Define indexers in C# with an example. (4)		
b.	i. Describe how C# support multiple inheritance? Explain by giving an example. (3)	2	2
	ii. Discuss the difference with Class and structure with suitable examples. (3)		
	iii. What are the major categories of data types in C#? (4)		
c.	i. Explain the role of JIT compiler. (3)	3	3
	ii. Discuss the significance of namespace in C#. What are the things that can be included in namespace? (3)		
	iii. What are the two methods used in C# to ensure the variable initialization? (4)		
d.	Discuss the following thread issues	3	3
	i. Race condition. (3)		
	ii. Dead lock. (3)		
	iii. Safe state (4)		

Q. 4. Attempt **any 2** questions. All carry equal marks.

(15 x 2 = 30)

S.No	Questions	CO	PO
a.	i. Develop a program to find area of various shapes rectangle, circle, and triangle. Use the concept of inheritance and polymorphism. (7)	1	1
	ii. Distinguish between strings and string builder classes in C#. (8)		
b.	i. What is the significance of interface in C#? Write a program in C# to define, use and inherit interface. (7)	2	2
	ii. Write a C# program to find the factorial of given "N" number. (8)		
c.	i. What is an indexer? Indexers can be overloaded justify your statement with an example. (7)	3	3
	ii. What is the use of Constructors? Analyze different types of constructors available in C# with examples. (8)		

9/1/24

Enrol. No. S R H U

Regn. No. D D

END SEMESTER EXAMINATION, JANURARY- 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. Write short note on CFG.	1	1
b. Explain LEX.	2	1
c. Explain the concept of input buffering.	2	1
d. Define operator grammar.	1	1
e. Explain LR (K) grammar.	1	1
f. Write short note on YACC.	2	5
g. Differentiate between synthesized attributes and inherited attributes.	2	2
h. Do comparison between compiler and interpreter.	2	1
i. Define dominator.	1	1
j. Give the reason, why code optimization is called optional phase?	2	1

Q.2. Short notes / Short Answer Type (Attempt any five out of Seven)

(5×4=20)

a. Write a note on bootstrapping.	1	1
b. Draw and explain various phases of a compiler.	2	1
c. Define top-down parsing.	1	1
d. Write the difficulties encountered in Top-down parsing and how are they overcome?	1	1
e. Explain syntax-directed translation.	2	1
f. Give the parse tree and translation for the expression $23*5+4$ according to the syntax-directed translation scheme.	3	2
g. Explain global data flow analysis and write its use in code optimization.	3	2

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

(3×10)

a.	(i) Define activation record. Also, write the general activation record field and their purpose (ii) Explain basic block with a suitable example and also discussed various transformations performed on the basic blocks.	3	3
b.	(i) Explain ambiguity of grammar with a suitable example. (ii) Consider the grammar- $S \rightarrow (L) \mid a$ $L \rightarrow L, S \mid S$ For the string (a, ((a, a), (a, a))) write leftmost derivative and construct parse tree	4	3
c.	(i) Consider the following grammar- $A \rightarrow ABd \mid Aa \mid a$ $B \rightarrow Bc \mid b$ Remove left recursion. (ii) Do left factoring in the following grammar- $A \rightarrow aAB \mid aA \mid a$ $B \rightarrow bB \mid b$	5	5
d.	(i) Explain various storage allocation strategies. (ii) Describe parameter passing mechanisms for a procedure call.	4	3

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

(2×15=30)

a.	(i) Define three-address code. Explain quadruple in detail. (ii) Consider the following while statement- while A > B and A ≤ 2 * B – 5 do A: A + B; Write the intermediate code for while statement (iii) Write a note on backpatching.	5	5
b.	Consider the following grammar- $5*3=15$ $S \rightarrow ABC$ $A \rightarrow a \mid bbD$ $B \rightarrow a \mid \epsilon$ $C \rightarrow b \mid \epsilon$ $D \rightarrow c \mid \epsilon$ (i) Construct the FIRST and FOLLOW sets for the grammar. (ii) Design a LL (1) parsing table for this grammar. (iii) Show that the grammar is LL (1) or not.	5	5
c.	(i) Explain DAF in detail. (ii) Construct DAG of the basic block after converting the code in 3-address representation- <pre> i = 1; j = 2; do A[i] = j; j = j * 2; i = i + 1; while (i < 10); </pre> (iii) Translate the following expression into quadruples, triples and indirect triples. - (a + b) * (c + d) – (b + c)	5	5
