

27/1/23

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END SEMESTER EXAMINATION, JAN-2023**MCA THIRD SEMESTER****COURSE CODE: MCE239 COURSE TITLE: MACHINE LEARNING****[Time allotted: Three hours]****[Max. Marks : 100]****Note:** Attempt all Sections & Questions.**Section (A)****Q.1.** Attempt all questions.**(2x 10 = 20)**

- a. Define Concept Learning
- b. List issues in Machine learning
- c. Define supervised learning
- d. Differentiate between Training Data and Testing Data
- e. Define Decision Tree
- f. Define uncertainty
- g. Write about underfitting problem
- h. Define Inductive Learning
- i. Write two Activation function of Neural Network
- j. Define PAC-Learnability

Section (B)**Q.2.** Attempt any 5 questions.**(7 x 5 = 35)**

- a. Discuss some applications of machine learning with examples.
- b. Explain representation of decision tree with example.
- c. Explain appropriate problem for Neural Network Learning with its characteristics.
- d. Explain Naïve Bayes Classifier with an Example
- e. Write Reinforcement learning problem characteristics.
- f. Explain the General-to-Specific Ordering of Hypotheses.
- g. Write about Genetic Algorithms.

Section (C)

Attempt any 3 questions.

(15 x 3 = 45)

- Q.3.** Describe the following problems with respect to Tasks, Performance and Experience:
- a. A Checkers learning problem
 - b. A Handwritten recognition learning problem
 - c. A Robot driving learning problem

Q.4. a. Give Decision trees for the following set of training examples

Day	Outlook	Temperature	Humidity	Wind	PlayTennis
D1	Sunny	Mild	High	Weak	No
D2	Sunny	Cool	Normal	Weak	Yes
D3	Overcast	Mild	High	Strong	Yes
D4	Rain	Mild	Normal	Weak	Yes
D5	Sunny	Mild	Normal	Strong	Yes
D6	Rain	Mild	High	Strong	No
D7	Overcast	Hot	Normal	Strong	Yes

Q.5. Define Bayesian theorem? What is the relevance and features of Bayesian theorem? Explain the practical difficulties of Bayesian theorem.

Q.6. Explain Reinforcement Learning and explain Reinforcement learning problem with neat diagram.

Q.7. Explain the final version space for the below mentioned training examples using candidate elimination algorithm.

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END SEMESTER EXAMINATION, JAN- 2023

MCA/B.Tech.(CSE), III/Vth Semester

COURSE CODE: MCA234/CCS351

COURSE TITLE: COMPUTER GRAPHICS

[Time allotted: Three hours]**[Max. Marks: 100]****Note:** Attempt all Sections & Questions.**Section (A)****Q. 1.** Attempt all questions.**(2 x 10 = 20)**

- a. What is multimedia?
- b. Define outcode?
- c. What are the different graphics file formats?
- d. What are the different fields in segment table?
- e. What is the difference between convex and concave polygon?
- f. What is view port?
- g. What are different aliasing techniques?.
- h. What is the different display adapter used in computer graphics?
- i. What is the advantage of DDA line generation Algorithm?
- j. What is difference between clockwise and anticlockwise rotation?

Section (B)**Q. 2.** Attempt any 5 questions.**(7 x 5 = 35)**

- a. Explain Circle generation algorithm.
- b. Compare different types of line generation Algorithm
- c. Explain the polygon seed filling algorithm
- d. Define Antialiasing and explain its different techniques.
- e. Explain 2D Scaling and reflection transformation.
- f. Difference between raster scan and Random scan display.
- g. Define Windowing and Explain different types of windowing Techniques.

Section (C)

Attempt any 3 questions.

(15 x 3 = 45)

Q. 3. a. Consider a line from (0,0) to (5,5) using simple Bresenham line generation Algorithm rasterize the line.

b. Explain flat panel device with working principle.

Q. 4. a. Rotate a Triangle define by A(0,0) B(6,0) and C(3,3) by 180 degree about origin in clockwise direction.

b. Scale a square matrix with coordinate A(0,0) B(5,0) C(5,5) and D(0,5) by 2 unit for x direction and 3 unit in y direction.

Q. 5. a. Explain back face removal algorithm in details

b. What is viewing Transformation? Explain different steps used in view transformation.

Q. 6. a. Explain the common colour scheme used in computer graphics

b. Explain warnocks algorithm in details

Q. 7. a. Explain the segment tables used in computer graphics

b. Explain line clipping Cohen Sutherland outcode algorithm with suitable example

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END SEMESTER EXAMINATION, JAN 2023

PROGRAM: MCA

THIRD SEMESTER

COURSE CODE: MCE233

COURSE TITLE: INTRODUCTION TO INTERNET OF THINGS

[Time allotted: Three Hours]

[Max. Marks: 100]

Note: Attempt all Sections & Questions.

Section (A)

Q. 1. Attempt all questions.

(2 x 10 = 20)

- a. What are sensors?
- b. Define role of API in IOT.
- c. Expand RTOS and UERT
- d. What are the various forms of memories used in embedded system?
- e. What is the role of things in IOT?
- f. Write two characteristics of IOT.
- g. Draw block diagram of a IOT device.
- h. Write any two advantages of IOT.
- i. What are the various sources used in IOT?
- j. Define IOT network.

Section (B)

Q. 2. Attempt any 5 questions.

(7 x 5 = 35)

- a. What are the different layers of IOT protocol stack?
- b. How does an RFID identify communicates and used for IOT technology?
- c. What are the merits and demerits of participatory sensing?
- d. Compare IOT and M2M Technologies.
- e. Show the components of embedded system, hardware and explain their principles of operation
- f. Briefly explain designing standardization of IOT.
- g. What is the difference between analog and digital sensors?

Section (C)

Attempt any 3 questions.

(15 x 3 = 45)

- Q.3.**
- a. List and explain embedded hardware units and devices of an embedded system.
 - b. Explain the process of converting an assembly language program into machine code is using a neat diagram.
- Q.4.**
- a. What is the role played by network in the IOT? Explain
 - b. What are risks and challenges in IOT?
- Q.5.**
- a. How actuators used for IOT-based control and monitoring?
 - b. Explain in brief one application of industrial IOT.
- Q.6.**
- a. Compare Arduino Uno Board features with Raspberry pi board.
 - b. What is the role of embedded platforms in IOT applications? Explain
- Q.7.** Explain IOT applications in details
- a. Smart City
 - b. Automotive

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END SEMESTER EXAMINATION, JAN 2023

PROGRAM: MCA

COURSE CODE: MCA232

III- SEMESTER

COURSE TITLE: COMPILER DESIGN

[Time allotted: Three hours]

Note: Attempt all Sections & Questions.

[Max. Marks: 100]

Q. 1. Attempt all questions.

Section (A)

(2 x 10 = 20)

- a. Write the features of good compiler.
- b. Compare and contrast the features of single pass compiler with multi-pass compiler.
- c. Explain the role of symbol table in various phases of compiler.
- d. Define ambiguity of grammar.
- e. Compare the top-down and bottom-up parsing techniques.
- f. Mention the limitations of operator precedence parsing.
- g. Write a short note on syntax tree.
- h. Give a short description of type checking.
- i. Define basic block.
- j. Write and explain data flow equations.

Q. 2. Attempt any 5 questions.

Section (B)

(7 x 5 = 35)

- a. Write the criteria for code improving transformations. Explain the principal sources of optimization in details.
- b. Explain the different parameter passing mechanisms for a procedure call. Explain any two methods with example.
- c. Explain various storage allocation strategies. Mention name of storage allocation is to be used if language permits recursion.
- d. Describe operator precedence parsing with a suitable example.
- e. Explain about LEX. Also, describe auxiliary definitions and translation rules for LEX with suitable example.
- f. Write a brief note on bootstrapping.
- g. Explain the various data structures used in symbol table.

Section (C)

Attempt any 3 questions.

(15 x 3 = 45)

Q.3. Explain the following optimizing transformations with suitable examples-

5*3=15

- a. Code propagation.
- b. Common sub-expression elimination.
- c. Dead-code elimination

Q.4. Consider the following grammar-

$S \rightarrow XX$
 $X \rightarrow yX | z$

- a. List all the LR (0) items for the above grammar and also construct SLR parsing table.
- b. List all the LR (1) items for the above grammar and also construct CLR parsing table.

**7
8**

- Q.5.** a. Construct LL (1) parser for the following grammar-
 $S \rightarrow AaAb \mid BbBa$
 $A \rightarrow \epsilon$
 $B \rightarrow \epsilon$ 8
- b. Do left factoring in the following grammar-
 $E \rightarrow E + T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (E) \mid id$ 7
- Q.6.** a. Define DAG. Construct the DAG for the following basic block-
 $a := b + c$
 $b := a - d$
 $c := b + c$
 $d := a - d$ 7
- b. Write a brief note peep-hole optimization. 8
- Q.7.** Briefly, explain the following loop optimization techniques-
a. Code Motion. 7
b. Induction variables and Reduction in strength. 8

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END SEMESTER EXAMINATION, JAN.-2023

PROGRAM: MCA

THIRD SEMESTER

COURSE CODE::MCA233 COURSE TITLE: .NET FRAMEWORK & C# PROGRAMMING

[Time allotted: Three hours]

[Max. Marks: 100]

Note: Attempt all Sections & Questions.

Section (A)

(2 x 10 = 20)

Q. 1. Attempt all questions.

- What is difference between static, public and void?
- What is an object?
- Define constructor.
- What are Jagged Array?
- Differentiate between out and ref parameters.
- What is "using" statement in C#?
- Can "this" command be used as static method?
- What is break and continue statement?
- What are C# access modifiers?
- Mention some important IDE's for C# coding.

Section (B)

(7 x 5 = 35)

Q. 2. Attempt any 5 questions.

- Explain the purpose of JIT? Explain in detail.
- What do you understand by Common Type System? Why it is advantageous? Explain in detail.
- What is method overloading? Explain with the help of a code snippet.
- Explain decision making and branching in C# with the help of code snippets.
- Explain the program structure of C#. Explain it with the help of a code snippet.
- How to handle exceptions in C#? Explain with the help of a code snippet.
- What is nesting of methods? Write a code snippet for it.

Section (C)

(15 x 3 = 45)

Attempt any 3 questions.

Q.3. What is MSIL? Why it is used? What are the advantages if it?

Q.4. In detail explain the difference between Java, C++ and C#.

Q.5. What do you understand by sockets? Explain in detail.

Q.6. Explain how C# handles with errors? Explain with the help of a code snippet.

Q.7. What do you understand by COM port? Explain where to use COM ports? Explain in detail.

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