

**INTERNAL ASSIGNMENT QUESTIONS
M.C.A. II SEMESTER**

2025



PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION

(RECOGNISED BY THE DISTANCE EDUCATION BUREAU, UGC, NEW DELHI)

OSMANIA UNIVERSITY

(A University with Potential for Excellence and Re-Accredited by NAAC with "A" + Grade)

DIRECTOR

Prof. G.B. Reddy

Hyderabad – 7, Telangana State

**PROF.G.RAM REDDY CENTRE FOR DISTANCE EDUCATION
OSMANIA UNIVERSITY, HYDERABAD – 500 007**

Dear Students,

Every student of M.C.A. Semester II has to write and submit **Assignment** for each paper compulsorily. Each assignment carries **30 marks**. The marks awarded to the students will be forwarded to the Examination Branch, OU for inclusion in the marks memo. If the student fail to submit Internal Assignments before the stipulated date, the internal marks will not be added in the final marks memo under any circumstances. The assignments will not be accepted after the stipulated date. **Candidates should submit assignments only in the academic year in which the examination fee is paid for the examination for the first time.**

Candidates are required to submit the Exam fee receipt along with the assignment answers scripts at the concerned counter on or before **05.03.2025** and obtain proper submission receipt.

ASSIGNMENT WITHOUT EXAMINATION FEE PAYMENT RECEIPT (ONLINE) WILL NOT BE ACCEPTED

Assignments on Printed / Photocopy / Typed will not be accepted and will not be valued at any cost. Only

HAND WRITTEN ASSIGNMENTS will be accepted and valued.

Methodology for writing the Assignments (Instructions) :

1. First read the subject matter in the course material that is supplied to you.
2. If possible read the subject matter in the books suggested for further reading.
3. You are welcome to use the PGRRCDE Library on all working days for collecting information on the topic of your assignments. (10.30 am to 5.00 pm).
4. Give a final reading to the answer you have written and see whether you can delete unimportant or repetitive words.
5. The cover page of the each theory assignments must have information as given in FORMAT below.

FORMAT

1. NAME OF THE STUDENT :
2. ENROLLMENT NUMBER :
3. NAME OF THE COURSE :
4. SEMESTER (I, II, III & IV) :
5. TITLE OF THE PAPER :
6. DATE OF SUBMISSION :
6. Write the above said details clearly on every subject assignments paper, otherwise your paper will not be valued.
7. Tag all the assignments paper wise and submit them in the concerned counter.
8. Submit the assignments on or before **05.03.2025** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

INTERNAL ASSIGNMENT – 2025
MCA SEMESTER II
PAPER – I : Operating Systems

ASSIGNMENT – I

Answer the following Questions. (each question carries three marks) 5X3=15

1. Explain the Deadlock detection and recovery using banker's algorithm.
2. Discuss FIFO page replacement algorithm with an example.
3. Explain File Access Methods in detail.
4. Explain about access matrix and implementation.
5. Write short note on Inter process communication.

ASSIGNMENT – II

Answer the following Questions. (each question carries three marks) 5X3=15

1. Define process. Explain different states of a process with a neat sketch.
2. Explain demand paging concept.
3. Describe file system structure.
4. Explain computer security classification
5. Discuss kernel modules in detail.

INTERNAL ASSIGNMENT – 2025

MCA SEMESTER II

PAPER – II : Data Base Management System

ASSIGNMENT - I

Answer the following Questions. (each question carries three marks) 5X3=15

1. What are the advantages and disadvantages of DBMS ?
2. Explain relational operators with suitable examples.
3. What is Normalization ? Explain 3 NF and BCNF with suitable examples.
4. What is an attribute? Explain different types of attributes.
5. Explain about ISAM with suitable example.

ASSIGNMENT – II

Answer the following Questions. (each question carries three marks) 5X3=15

1. Explain about B+ Trees with suitable example.
2. Explain about extendible hashing with suitable example.
3. Explain about view and conflict serializability.
4. Explain about time stamp based protocols.
5. What is a deadlock? Explain about deadlock detection and prevention.

INTERNAL ASSIGNMENT – 2025

MCA SEMESTER II

PAPER – III : DAA

ASSIGNMENT - I

Answer the following Questions. (each question carries three marks) 5X3=15

1. Illustrate all working of quick sort algorithms with an example.
2. Explain knapsack problem in greedy method with an example.
3. Discuss Dijkstra's algorithm with an example.
4. Explain Kruskal's and Prim's algorithms for finding a Minimum-Cost Spanning Tree. Compare their performance.
5. Explain Strassen's Matrix Multiplication and compare its efficiency with the traditional matrix multiplication method.

ASSIGNMENT – II

Answer the following Questions. (each question carries three marks) 5X3=15

1. Illustrate all pairs shortest path algorithm.
2. Elaborate about 8 queens' problem.
3. Describe P, NP, NP-Complete and NP – Hard.
4. What is the Branch and Bound method? Explain its general approach and how it differs from backtracking. .
5. Explain the concept of a multistage graph. How is dynamic programming used to find the shortest path in a multistage graph.

INTERNAL ASSIGNMENT – 2025

MCA SEMESTER II

PAPER – IV : ARTIFICIAL INTELLIGENCE

ASSIGNMENT - I

Answer the following Questions. (each question carries three marks) 5X3=15

1. Explain the branches of AI based on capabilities.
2. Write about applications of AI with examples.
3. Write a detailed note of ID-A* and constraint satisfaction.
4. Explain Game playing and Alpha Beta pruning.
5. What is logic programming and write its drawbacks ?

ASSIGNMENT – II

Answer the following Questions. (each question carries three marks) 5X3=15

1. Briefly explain knowledge representation and semantic network ?
2. Explain certainty Factor theory and Dempster-Shafer theory.
3. Evaluate legal and ethical implications of AI.
4. Write a note on a) AI b) ANI c) AGI and d) ASI.
5. What is semantic analysis, how it works and write its techniques?

INTERNAL ASSIGNMENT – 2025
MCA SEMESTER II
PAPER – V : MACHINE LEARNING

ASSIGNMENT - I

Answer the following Questions. (each question carries three marks) 5X3=15

1. Explain the concepts of Statistical Decision Theory. Discuss how loss functions and risk minimization are applied in decision making.
2. Discuss the significance of Probability, Linear Algebra and Convex Optimization in machine learning. Explain their roles with examples, highlighting how they contribute to model building and optimization”.
3. Derive the Bayes estimator for a given loss function. Explain its significance in Bayesian Learning with examples.
4. Compare and contrast Ridge Regression and Lasso Regression. Include mathematical formulation, use cases and limitations.
5. Derive the optimization problem for support Vector Machines (SVM) with linear separability. Explain the role of Kernels in SVM.

ASSIGNMENT – II

Answer the following Questions. (each question carries three marks) 5X3=15

1. Explain the working of the Back propagation algorithm in Artificial Neural Networks. Derive the mathematical steps involved.
2. Compare and contrast the Byes Optimal Classifier and Naïve Bayes Classifier. Discuss their advantages, limitations and applications.
3. Discuss ensemble methods in machine learning with a focus on Bagging and Boosting.
4. Explain the K-means and Density – Based clustering algorithms. Compare their working principles, strengths and limitations with examples.
5. Describe the Expectation – Maximization (EM) algorithm and its application in Gaussain Mixture Models (GMMs). Include the mathematical steps involved.

INTERNAL ASSIGNMENT – 2025
MCA SEMESTER II
PAPER – VI : Operations Research

ASSIGNMENT - I

Answer the following Questions. (each question carries three marks) 5X3=15

1. Explain the procedure to formulate an LPP with an example.
2. Discuss the Simplex method, Big-M method and Two phase methods, give the difference between them.
3. Give the procedure of North-west corner rule and Matrix minimum methods for solving a Transportation problem.
4. Explain Hungarian method to solve an Assignment problem.
5. Write about Game theory with and without saddle points for 2x2 games. .

ASSIGNMENT – II

Answer the following Questions. (each question carries three marks) 5X3=15

1. Write about sensitivity analysis.
2. Explain the special cases involved while solving a LPP.
3. Discuss VAM method and MODI method to solve a TP.
4. What is Integer programming problem ? Explain.
5. Explain 2xn (or) mx2 games, methods to solve them. .

