

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

2026



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

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

Dear Students,

Each student has to write the answers to the Assignment questions with neat own handwriting using Blue Pen (Black Ink not allowed) for each paper. Assignments have to submit after the payment of Rs.500/- by showing the receipt of the same. If the Assignment is not submitted within stipulated time i.e. before the theory exams / last date is treated as absent.

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 **10.06.2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

MCA SEMESTER II

PAPER – I : Operating Systems

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

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.
6. Define process. Explain different states of a process with a neat sketch.
7. Explain demand paging concept.
8. Describe file system structure.
9. Explain computer security classification
10. Discuss kernel modules in detail.

MCA SEMESTER II

PAPER – II : Data Base Management System

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

1. Explain different relational algebra operators.
2. Explain the advantages of DBMS.
3. Explain weak and strong entity.
4. Explain the functions of DBA.
5. Explain about static hashing.
6. Explain about extendable hashing.
7. Explain about ACID properties.
8. Explain about 2 Phase locking.
9. Explain about deadlocks.
10. Explain about timestamp based protocol.

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PAPER – III : Design and Analysis of Algorithms (DAA)

Note: Answer all the Questions. Each Question carries three marks Q10x3M=30M

1. Illustrate the working of the Quick Sort algorithm with an example.
2. Explain the Knapsack problem using the 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.
6. Illustrate All Pairs shortest path algorithm.
7. Elaborate about 8 Queens' problem.
8. Describe P, NP, NP-Complete and NP – Hard.
9. What is the Branch and Bound method? Explain its general approach and how it differs from backtracking. .
10. Explain the concept of a Multistage Graph. How is Dynamic Programming used to find the shortest path in a multistage graph.

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PAPER – IV : ARTIFICIAL INTELLIGENCE

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

1. Explain data types expressions and statements in Python.
2. Write short note on types and dictionaries in Python.
3. What is Artificial Intelligence? Explain its functions and subareas?
4. Explain A* Search.
5. What is constraint satisfaction? Explain its importance.
6. What is Professional Logic? Explain its basic concepts.
7. Explain natural deduction system and axiomatic system.
8. Explain the phases in building an expert system.
9. Explain about Dempster – Shafer theory.
10. What is the semantic Web? Explain case grammars.

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PAPER – V : MACHINE LEARNING

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

1. Explain about Bayesian Learning alongwith its estimates.
2. Write about Ridge regression and Lasso Dimensionality Reduction.
3. Differentiate between Linear and Ridge Regression.
4. Write about Logistic Regression of its Application.
5. Explain about Linear Discriminant Analysis.
6. Explain and its application of support vector machines.
7. Write about Artificial Neural Networks and Back Propagation.
8. Write about Bayes optimal classifiers and Naïve Bayes.
9. Differentiate between K-means and K-Medoids.
10. Write about Expectation Maximization and GMMs with examples.

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PAPER – VI : Operations Research

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

1. State any two limitations of linear programming.
2. Distinguish between primal and dual.
3. What is game theory? Discuss its importance to business decisions.
4. Explain the term sensitivity analysis.
5. Why is linear programming important in several types of industries?
6. What is Bellman principle of optimality?
7. Differentiate between two phase method and big m-method.
8. State an LP (Linear Programming) problem in standard form.
9. What do you understand by a linear programming problem? What are its major limitations?
10. What do you understand by economic interpretation of dual LPP (Linear Programming Problem)?