INTERNAL ASSIGNMENT QUESTIONS
M.C.A. III 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 MCA III semester 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 fee only remaining Examination fee pay to Examination Branch, OU, after notification separately to be issued.**

Candidates are required to submit the Assignment fee receipt of Rs.500/- along with the assignment answers scripts at the concerned counter on or before **25-10-2025** and obtain proper submission receipt.

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.

Students are advised to use Blue Pen only.

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 **25-10-2025** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

MCA SEMESTER - III

PAPER – 1 : SOFTWARE ENGINEERING

ASSIGNMENT - I

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

1. Define Software Engineering. Explain Software Development process models.
2. Describe Software Development Life Cycle (SDLC).
3. Discuss the role of Software Architecture.
4. Explain about functional specification with use cases.
5. Write a sort note on Project Schedule.

ASSIGNMENT - II

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

1. Compare and Contrast function oriented design and object oriented design.
2. Explain programming principles.
3. Differentiae white box testing and black box testing.
4. Discuss capability maturity model integration.
5. Define i) re-engineering ii) reverse engineering iii) forward engineering

MCA SEMESTER - III

PAPER – II : COMPUTER NETWORK

ASSIGNMENT - I

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

1. Write about TCP / IP.
2. Write about guided medium (Twisted Pair, Coaxial Cable and Optical Fibre).
3. Distinguish between Pure and Slotted ALOHA.
4. Write about HDLC.
5. Write about Error Control I Datalink Layer.

ASSIGNMENT - II

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

1. Distinguish between Virtual Circuit and Datagram Circuit.
2. Write about Distance Vector Routing.
3. Write about IP Protocol with its Header.
4. Write about TCP Protocol with its Header.
5. Write about DNS.

MCA SEMESTER - III

PAPER – III : DATA SCIENCE

ASSIGNMENT - I

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

1. Load mtcars dataset and apply summary(), str(), head(), view(), edit() (Unit-I)
2. Describe the methods for reading data of various types (Uit-I)
3. Explain RMySQL package (Unit-I).
4. Discuss the descriptive statistics for employee data frame (Unit-II).
5. Write the summary of functions for exploring data in R (Unit – II).

ASSIGNMENT - II

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

1. What is the syntax of lm() function? (Unit – III).
2. Explain logistic regression, its uses and its function (Unit – III).
3. Discuss the concepts of entropy and information gain (Unit – IV).
4. Describe basic decision tree algorithm (Unit – IV).
5. Describe K-Means algorithm (Unit – V).

MCA SEMESTER - III

PAPER – IV : WEB TECHNOLOGIES

ASSIGNMENT - I

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

1. What is the List ? Explain the types of lists.
2. Explain about CSS. What are the types of CSS ?
3. What is an event ? Explain the types of events.
4. Explain about arithmetic operations in JavaScript.
5. Discuss about Objects, Math and string in JavaScript.

ASSIGNMENT - II

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

1. Explain about VB Script and Data types.
2. Discuss about String manipulation.
3. What is IIS?
4. Discuss about Apache Web Server.
5. Explain about CGI.

MCA SEMESTER - III

PAPER – V : INFORMATION SECURITY

ASSIGNMENT - I

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

1. Explain about NSTISSC Model.
2. Describe about Security SDLC.
3. What are the standards and practices security.
4. What is Risk Management ? Explain
5. List and explain Risk Control Practices.

ASSIGNMENT - II

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

1. Discuss about firewalls and VPNs.
2. Write shortly on Cryptography.
3. Write about Project Management.
4. Explain the use of digital forensics.
5. Explain the protocols for secure communications.

MCA SEMESTER - III

PAPER – VI : INTERNET OF THINGS

ASSIGNMENT - I

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

1. Define the Internet of Things (IoT). Explain the major components and architecture of IoT with a neat diagram.
2. What is Client – Server Architecture? Explain how communication takes place between a client and a server in internet technology.
3. Explain the importance of prototyping in IoT application development. Give suitable examples.
4. Discuss the different service models of cloud computing (SaaS, PaaS, IaaS) with examples.
5. Discuss the challenges of hardware design in scaling IoT prototypes into commercial products.

ASSIGNMENT - II

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

1. What are the main applications of IoT in healthcare, agriculture, and smart cities ? Discuss with suitable examples.
2. Describe the role of IP addressing and DNS in internet communication with examples.
3. Compare and contrast Arduino and Raspberry Pi in terms of IoT prototyping and programming.
4. Discuss the various types of analytics: descriptive, diagnostic, predictive and prescriptive with examples.
5. Illustrate with a case study how a successful IoT prototype evolved into a real-world product.

MCA SEMESTER - III

PAPER – VII : NATURAL LANGUAGE PROCESSING

ASSIGNMENT - I

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

1. Define Random variable. Let a pair of dice be thrown and the random variable x be the sum of the numbers that appear on the two dice. Find the mean of x.
2. Discuss about Bayesian statistics.
3. State i) Entropy ii) Joint Entropy iii) Conditional Entropy
4. Write about maximum likelihood estimation (MLE).
5. What are the applications of word sense Disambiguation ?

ASSIGNMENT - II

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

1. Differentiate supervised learning and unsupervised learning.
2. Explain Flip-Flop Algorithm.
3. Discuss in detail about Evaluation measures.
4. What do you understand about probabilistic content Free Grammar.
5. Write an algorithm for bottom up and Top-Down Hierarchical astoning.

MCA SEMESTER - III

PAPER – VIII : NATURAL LANGUAGE PROCESSING

ASSIGNMENT - I

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

1. Explain about any 3 Attributes of Securities throw diagram.
2. Write about any 3 types of Attacks.
3. What are preventions from Replay attack. Explain clearly.
4. What is secret key cryptography. Explain about DES, AES ?
5. What is pubic key cryptography. Explain about RSA, ECC.

ASSIGNMENT - II

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

1. Write about Hash function Integrity, Authentication and Non-Repudiation.
2. Explain about message Authentication code.
3. Write about Biometric Authentication.
4. Explain about Digital Certificates.
5. Write about attacks on smart-cards.