

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

2024



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,

Every student of M.C.A. Semester III 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 **12-08-2024** 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 **12-08-2024** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

INTERNAL ASSIGNMENT – 2024

MCA SEMESTER - III

PAPER – I : SOFTWARE ENGINEERING

ASSIGNMENT - I

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

1. Explain any two software Development Process Models.
2. Describe Software Requirement Specification ?
3. What is the risk management in Software Projects ?
4. Explain Programming Principles and Guidelines.
5. Describe in detail about frame work of PCCM.

ASSIGNMENT - II

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

1. Illustrate Project Management Process.
2. What is the role of Software Architecture ? Explain different views of the Software Architecture.
3. Explain effort and schedule estimates of software project.
4. Distinguish Black Box Testing and White box Testing.
5. Explain Software Re-engineering and Reverse Engineering.

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MCA SEMESTER - III

PAPER – II : COMPUTER NETWORKS

ASSIGNMENT - I

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

- Write about TCP / IP and OSI reference model.
 - Write about various topologies of computer Networks.
- Distinguish between guided and unguided medium.
 - Write about Flow control and Error control in Data Layer.
- Distinguish between pure and slotted ALOHA.
 - Write about IEEE 802.3 (CSM / CD)
- Write about elementary (or) Primitive System calls.
- Write about Distance Vector Routing.
 - Write about ICMP.

ASSIGNMENT - II

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

- Write about Link State Routing.
 - Write about ARP and RARP.
- Explain IP Protocol.
 - Find CRC for the given message $M=1101011011$ for the given divisor polynomial.
 $p=10011(x^4=x+1)$.
- Write about TCP.
 - Write about multiplexing.
- Write about Timer Management.
 - Write about quality of Service (Q&S).
- Write about DNS
 - Write about (i) SMTP (ii) FTP
 - Write about advanced socket system calls.

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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 (Unit-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)

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MCA SEMESTER - III
PAPER – IV : WEB TECHNOLOGIES

ASSIGNMENT - I

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

1. Describe Links Images and Webpages.
2. Discuss about lists, types of lists.
3. What is CSS ? Describe types of CSS.
4. Explain about Event models.
5. Discuss about filters and transactions.

ASSIGNMENT - II

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

1. Discuss about java script & its objectives.
2. Explain about data types in java Scripts.
3. Discuss about control structures in java Scripts.
4. What is VB Script & operators in VB Script.
5. Explain about String Manipulation in VB Script.

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MCA SEMESTER - III

PAPER – V P. E. (I) : Information Security

ASSIGNMENT - I

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

1. Discuss about critical characteristics of information.
2. Describe about NST ISSC Security Model.
3. Give the overview on risk management.
4. Write a note on firewalls and VPN.
5. Write the importance of security SDLC.

PAPER – V P. E. (I) : Information Security

ASSIGNMENT - II

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

1. Explain about intrusion detection and prevention systems.
2. Write briefly on cryptographic algorithms.
3. What is the role of digital forensics in security.
4. List and explain protocols for secure communications.
5. Discuss about legal, ethical, and professional issues.

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MCA SEMESTER - III

PAPER – V P. E. (II) : Internet of Things

ASSIGNMENT - I

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

1. What is the vision behind the IoT concept and how does it impact our daily lives?
2. Describe the role of Internet Protocol (IP) in IoT networks and how IP address is facilitating the identification and routing of data within the IoT system.
3. How do you compare the suitability of Arduino and Raspberry Pi for the prototyping phase for smart agriculture IoT system? Write its advantages and limitations.
4. What is SaaS and write about its characteristics and benefits.
5. How does the software scalability of IoT products impact the overall user experience and long term viability of the product in the market?

PAPER – V P. E. (II) : Internet of Things

ASSIGNMENT - II

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

1. What are the major security challenges in IoT and how can they be addressed to ensure privacy and protection?.
2. Describe the role of HTTP and HTTPS in smart city IoT project and how these protocol will enable data exchange, user interface and remote control of IoT system.
3. Explain the importance of prototyping in the development of IoT solutions and describe the key steps involved in the process and how it helps in refining IoT system.
4. Describe the different Amazon web services for IoT.
5. Explain the components of the Business Model Canvas and how it can be applied to design a sustainable and effective business model for an IoT product manufacturing venture.

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MCA SEMESTER - III

PAPER – VI PE - I : Network Security

ASSIGNMENT - I

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

1. Write about Integrity and Authenticity.
2. Explain about types of attacks.
3. Explain about DES & Triple DES
4. Explain about AES.
5. Write about RSA and ECC

ASSIGNMENT - II

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

1. Explain about Hash Function (MD5, SHA5).
2. Explain about message Authentication code.
3. Write about digital signatures (RSA, DSA).
4. Write about digital certificates.
5. Explain about Certifying Authorities.

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MCA SEMESTER - III

PAPER – VI PE - II : Natural Language Processing

ASSIGNMENT - I

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

1. 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. Explain the phrase structure in detail.
3. Describe Maximum Likelihood Estimation (MLE) with an example.
4. What do you know about good – turing estimation?
5. Differentiate supervised and unsupervised learning models.

PAPER – VI PE - II : Natural Language Processing

ASSIGNMENT - II

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

1. Describe Bayesian Disambiguation Algorithm.
2. Explain the general form of an HMM.
3. Discuss PoS Tagging with Hidden Markov Model.
4. Find the probability of the parse tree t given below; where ?

S – NP VP	1.0	NP – NP PP	0.4
SP – P NP	1.0	NP – astronomers	0.1
VP – V NP	0.7	NP – ears	0.18
VP – VP PP	0.3	NP - saw	0.04
P – With	1.0	NP – stars	0.18
V – saw	1.0	NP – telescopes	0.1

5. How do you implement hierarchical clustering?
