INTERNAL ASSIGNMENT QUESTIONS

M.C.A III Semester

2026-2027

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
Sr. Prof. N.Ch. Bhatracharyulu
Hyderabad – 7 Telangana State

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) :

- First read the subject matter in the course material that is supplied to you.
- If possible read the subject matter in the books suggested for further reading.
- 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).
- Give a final reading to the answer you have written and see whether you can delete unimportant or repetitive words.
- 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 :**

- Write the above said details clearly on every subject assignments paper, otherwise your paper will not be valued.
- Tag all the assignments paper wise and submit them in the concerned counter.

Submit the assignments on or before **30.11.2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper / Subject : Natural Language Processing

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

1. Bag 1 contains 4 white and 6 black balls while another Bag 2 contains 4 white and 3 black balls. One ball is drawn at random from one of the bags and it is found to be black. Find the probability that it was drawn from Bag 1.
2. Write and explain Heuristic Sentence Boundary Detection Algorithm.
3. What is a BIN (Binned Sequence), and how is it used to organize and analyze data in language modeling or related fields?
4. Explain in detail about Good-Turing Estimation.
5. What are some of the difficulties encountered in WSD, and why is disambiguation challenging in certain contexts?
6. How does Supervised Disambiguation differ from Unsupervised Disambiguation in word sense disambiguation?
7. How do Hidden Markov Models differ from traditional Markov Chains, and what are their general forms?
8. What is POS tagging, and why is it essential in natural language processing?
9. What does the probability of a parse tree represent in the context of Probabilistic Context-Free Grammars (PCFGs)?
10. How does EM find applications in Statistical NLP, and what benefits does it offer in natural language processing tasks?

Course Faculty : Dr. Potu Narayana

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper / Subject : Network Security (Elective – II)

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

(I – Unit)

1. Explain about attributes of security.
2. Write about types of attacks and DOS (Denial of Service).

(II – Unit)

3. Describe about cryptography types.
4. Explain about DES – Double DES and Triple DES.

(III – Unit)

5. Write about RSA, ECC [Cryptosystems].
6. Explain about message authentication & authentication techniques.

(IV – Unit)

7. Discuss about digital certificates and certifying authorities.
8. Write about smart cards and applications of smart cards.

(V – Unit)

9. Discuss about Secure Electronic Transaction (SET) Protocol.
10. Write about six (6) micropayments.

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper / Subject : Internet of Things

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

1. Explain the vision, applications and infrastructure of the Internet of Things (IoT) with suitable examples.
2. Discuss the major components of IoT, including networks, communication, data management, security and device-level energy issues.
3. Explain the Internet communication protocols IP, TCP and UDP with suitable examples.
4. Explain IP addresses, DNS, Static and Dynamic IP addresses, MAC addresses, TCP/UDP ports and HTTP/HTTPS protocols.
5. Explain the different components of embedded devices, including sensors, actuators, microcontrollers and SoC. Also discuss Arduino and Raspberry Pi platforms.
6. Explain bitwise operations in Embedded C (AND, OR, XOR and NOT) with suitable examples. Write an Arduino program for LED blinking.
7. Explain the cloud computing service models (SaaS, PaaS and IaaS) with suitable examples. Discuss Amazon Web Services for IoT.
8. Explain the role of data analytics in IoT and describe the Hadoop MapReduce job execution workflow with a neat diagram.
9. Explain the different steps involved in IoT product manufacturing, from prototype development to mass production.
10. Discuss the ethical issues in IoT related to privacy, control and environment. Explain the possible solutions to these issues.

Course Faculty : K. Keerthi

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper / Subject : Information Security

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

1. Explain about NSTISSC Security Model.
2. Discuss about Legal, Ethical issues.
3. What is cryptography? Explain cryptographic algorithms.
4. Give the overview on Firewall VPNs.
5. How do you implement information security?
6. List and explain about protocols for secure communications.
7. What do you mean by Risk Management? Explain about Risk assessment.
8. Briefly explain about SDLC.
9. Write short note on cryptographic tools.
10. Write the importance of Digital Forensics.

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper / Subject : Web Technologies

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

Assignment – I

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

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.

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper : PCC303 Subject : Data Science

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

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. Discuss the descriptive statistics for employee data frame (Unit – II)
4. Write the functions for exploring data in R (Unit – II)
5. What is the syntax of lm() function? (Unit – III)
6. Explain logistic regression, its uses and its function (Unit – III)
7. Discuss the concepts of entropy and information gain (Unit – IV)
8. Describe basic decision tree algorithm (Unit – IV)
9. Describe K-Means algorithm (Unit – V)
10. Explain frequent itemset (Unit – V)

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INTERNAL ASSIGNMENT QUESTION PAPER – 2026

MCA – III Semester

Paper : II **Subject : Computer Networks**

Note: Answer all the Questions. Each Question carries three marks **Max. Marks: 30**

1. a) Briefly describe the ISO/OSI model
   b) Briefly describe various topologies of computer networks
2. a) Describe various transmission media used in Computer Networks
   b) Describe RS 232 interface with neat sketch.
3. Write notes on
   (i) Error detection and correction (ii) Go Back N protocol ARQ (iii) Sliding window protocol
4. a) List the functions of MAC layer
   b) Describe IEEE 802.3 LAN
5. Write notes on
   (i) IPv4 addressing (ii) Link state routing algorithm (iii) Subnetting
6. a) Why do we need IPv6 and what are the advantages of using IPv6 addressing?
   b) Write notes on (i) ICMP (ii) OSPF
7. a) Describe the objectives of transport layer
   b) Describe in detail Transmission Control Protocol (TCP)
8. a) What is congestion control? Briefly describe various congestion control methods
   b) Write notes on (i) UDP (ii) QoS
9. a) What is socket programming? Describe the objectives of socket programming
   b) Write a C program to implement iterative client-server problem
10. Write notes on
    (i) DNS (ii) SMTP (iii) FTP (iv) HTTP

Name of the Faculty : K. Muralidhar

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : MCA – III Semester

Paper : 1 Subject : Software Engineering

Note: Answer all the Questions. Each Question carries three marks **Q10 x 3M = 30M**

1. Explain the software problem with respect to cost, schedule, quality.
2. Explain component software processes and project management process.
3. Explain functional specification using use case with a suitable example.
4. Explain the role of software architecture, architectural views.
5. Explain risk management planning, quality planning and project monitoring plan.
6. Explain object-oriented design and function-oriented design.
7. Explain black box testing and white box testing with examples.
8. Explain software testing process, code inspections & software metrics.
9. Explain software maintenance, its types and software supportability.
10. Explain software process improvement (SPI), CMMI, PCMM and SPI return on investment.

Name of the Faculty : Anjaneyulu
Dept. _____