

MASTER OF COMPUTER APPLICATIONS

MCA-II YEAR Internal Assignment Questions



2021

PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION

(Recognised by the Distance Education Bureau, UGC, New Delhi.)

OSMANIA UNIVERSITY, HYDERABAD – 500 007 Telangana State INDIA

(A University with Potential for Excellence and re-accredited by NAAC with 'A⁺⁺' grade)

☞ Last date to submit assignment : **October 9, 2021**

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Dear Students,

All the students of **Master of Computer Application Program (MCA)** has to write **2** Assignments for each paper and submit **Assignment** for each paper compulsorily. Each assignment carries **20 marks**. University Examinations will be held for **80 marks**. The concerned faculty evaluates these assignment scripts. The marks awarded to you will be forwarded to the Controller of Examination, OU for inclusion in the University Examination marks. If you fail to submit Internal Assignments before the stipulated date, the internal marks will not be added to University examination marks under any circumstances. **The assignment marks will not be accepted after the stipulated date.**

You are required to **pay Rs.500/- fee** towards Internal Assignment marks through online <http://oucde.net> and submit the payment receipt along with assignment at the concerned counter **on or before 9th October, 2021** and obtain proper submission receipt.

ASSIGNMENT WITHOUT THE PAID RECEIPT WILL NOT BE ACCEPTED

Assignments on Printed / Photocopy / Typed papers will not be accepted and will not be valued at any cost. Only hand written Assignments on A/4 size paper (one side only) will be accepted and valued.

Methodology for writing the Assignments:

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 including Sunday 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 COURSE : _____
2. NAME OF THE STUDENT : _____
3. ENROLLMENT NUMBER : _____
4. NAME OF THE PAPER : _____
6. DATE OF SUBMISSION : _____

7. Write the above said details clearly on every assignment paper, otherwise your paper will not be valued.
8. Tag all the assignments paper-wise and submit.
9. Submit the assignments on or before **9th October, 2021** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

Prof.G.B.Reddy
DIRECTOR

☞ Last date to submit assignment : **October 9, 2021**

CDE – 201

**MCA-II YEAR
DATA COMMUNICATIONS AND COMPUTER NETWORKS
ASSIGNMENT – I**

Answer all the questions

Marks : 5 x 4 = 20

1. (a) Write about : (i) CSMA/CD (ii) Transmission Media
(b) Explain Token Ring (or) IEEE 802.5.
 2. (a) Write about : (i) LAN Architecture (ii) ISDN
(b) Write about IEEE 802.4 (or) Token Bus.
 3. (a) Distinguish between Datagram Subnet and Virtual Circuit Subnet.
(b) Write about Optimality Principle and Shortest Path Routing.
 4. (a) Write about : (i) Flow based Routing (ii) Flooding
(b) Write about : (i) Loading Shedding (iv) Traffic Shaping
 5. (a) Write about Transport Service Primitives.
(b) Write about Connection Establishment.
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CDE – 201

**MCA-II YEAR
DATA COMMUNICATIONS AND COMPUTER NETWORKS
ASSIGNMENT – II**

Answer all the questions

Marks : 5 x 4 = 20

1. (a) Write about L (i) TCP Timer Management (ii) TCP Connection Release
(b) Write about TCP Congestion Control.
 2. (a) Explain Advanced Socket System Calls.
(b) Write about Asynchronous I/O with Program.
 3. (a) Explain Internet Super Server
(b) Write about : (i) Input – Output Multiplexing (ii) Out-of-Band Data
 4. (a) Write about : (i) Substitution Cipher (ii) Transposition Cipher
(iii) PGP
(b) Write about Authentication using KDC.
 5. (a) Write about DNS.
(b) Write about E-mail Architecture and Services.
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CDE – 202

**MCA-II YEAR
DATABASE MANAGEMENT SYSTEM
ASSIGNMENT – I**

Answer all the questions

Marks : 5 x 4 = 20

- 1) a) What is DBA? Explain the Functions of DBA.
b) What is DBM? Explain the roles of DBM.
 - 2) a) What is a Relationship? Explain different types of Relationships with an example.
b) What is an Entity? Explain weak and strong Entities with an example.
 - 3) (a) Explain Three-Levels of Abstraction? What is Data Independence ? Explain different types of Data Independence.
(b) **Consider the following Schema**
Supplier(sid:Integer, sname:string, address: string)
Parts(pid:integer, pname : string , color : string) **Catalog**(sid : integer, pid : integer, cost : real)
Write the following queries in relational algebra, tuple relational calculus and domain relational calculus:
 - a) Find the names of suppliers who supply some red part
 - b) Find the *sid* of suppliers who supply some red or green part.
 - c) Find the sid of suppliers who supply some red part or are at 221 Packer Ave.
 - d) Find the sid of the suppliers who supply red part and cost = 1000.
 4. (a) Explain aggregate functions in QBE with an example
(b) What is an Index? Explain the Properties of an Index.
 5. (a) Explain about Cost-Model.
(b) Explain the structure of ISAM? Explain insertion and deletion operations on ISAM with an example.
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CDE – 202

**MCA-II YEAR
DATABASE MANAGEMENT SYSTEM
ASSIGNMENT – II**

Answer all the questions

Marks : 5 x 4 = 20

- (a) Write about
(i) Link State Routing (ii) Hierarchical Routing (iii) Choke Packets
(b) Write about IP Protocol.
- (a) Explain different types of File Organizations.
(b) What is B+ -Tree? Explain the operations performed on B+-Tree with an example.
- (a) Explain about Hash Function? Explain about Static Hashing? Differentiate between linear and extendible hashing.
(b) Explain about View Serializability?
- (a) Explain about Conflict Serializability.
(b) Explain about Locks? Explain about Two-Phase Locking Technique.
- (a) Explain about Distributed Operating System
(b) What is Deadlock? Explain about deadlocks.

CDE – 203

**MCA-II YEAR
OPERATING SYSTEM
ASSIGNMENT - I**

Answer all the questions

Marks : 5 x 4 = 20

- Define Operating System and discuss its various function of operating system in brief
- Explain the structure of a monitor & monitor solution to dining philosopher's problem
- (a) Explain briefly how resource allocation graphs are used in detecting and avoiding deadlock explain.
(b) Compare file allocation methods
- (a) Explain process management and explain about inter process communications
(b) What is distributed systems. Explain the goals and challenges of distributed
- Explain the structure of ISAM? Explain insertion and deletion operations on ISAM with an example

CDE – 203

**MCA-II YEAR
OPERATING SYSTEM
ASSIGNMENT - II**

Answer all the questions

Marks : 5 x 4 = 20

- Consider the following snapshot of a system

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D ₀
P ₀	0	0	1	2	0	0	1	2	1	5	2	0
P ₁	1	0	0	0	1	7	5	0				
P ₂	1	3	5	4	2	3	5	6				
P ₃	0	6	3	2	0	6	5	2				
P ₄	0	0	1	4	0	6	5	6				

Answer the following questions using Bankers Avoidance algorithm

- I) is the system in a safe state, if so give the sequence
II) If a request from process P arrives for (0,4,2,0) can the request be granted immediately.
- a) Explain the features of UNIX Operating system and explain its architecture.
b) What is security explain security descriptor.
- a) Explain DMA Mode of I/O. What are the steps in DMA transfers.
b) Identify the functions in Client and the Server in Client/Server architecture.
- Explain RPC. Identify the components of RPC mechanism
- Explain Distributed shared memory concept.

MCA-II YEAR
CDE – 204 SOFTWARE ENGINEERING & OBJECT ORIENTED SOFTWARE DESIGN
ASSIGNMENT-I

Answer all the questions

Marks : 5 x 4 = 20

1. (a) Discuss about **SE Challenges**.
(b) Differentiate between **Spiral Model** and **Waterfall Model**
2. (a) Define **Software Requirement**. What is the **need** for Requirements?
(b) What is **Structure Design Methodology**? Explain the **Steps** with an example
3. (a) Explain any One **Effort Estimation Model**
(b) Explain **Risk Management**
4. (a) Discuss **Configuration Management** Process
b) Explain about **Building blocks** of UML
5. (a) Explain **USDP**
(b) Write about **Workers** & their **Role** in **Testing** workflow

MCA-II YEAR
CDE – 204 SOFTWARE ENGINEERING & OBJECT ORIENTED SOFTWARE DESIGN
ASSIGNMENT- II

Answer all the questions

Marks : 5 x 4 = 20

1. (a) What is **CMMI**? Explain
(b) Explain about **Design Verification**
2. (a) Write about **Module-Level** design principles
(b) Explain about **Formal Technical Reviews**
3. (a) Write about **Software Metrics**.
(b) Define **Reverse engineering, Forward Engineering**
4. (a) Draw a **Use Case diagram** for **PayRoll** System
(b) Differentiate between **Analysis & Design Classes**
5. (a) What are the **activities** in **Design** workflow?
(b) Differentiate between **State-chart** and **Activity** diagrams

MCA-II YEAR
CDE – 205 DESIGN AND ANALYSIS OF ALGORITHMS
ASSIGNMENT – I

Answer all the questions

Marks : 5 x 4 = 20

1. What is an Algorithm ? Explain the various properties of an algorithm.
2. What is the time complexity of an algorithm? Explain with an example.
3. Write the 'Merge Sort' algorithm. Give an example.
4. Write the Greedy Algorithm to generate shortest paths from a single source to all the remaining vertices in a graph.
5. Write an algorithm for travelling salesman problem and explain with an example.

MCA-II YEAR
CDE – 205 DESIGN AND ANALYSIS OF ALGORITHMS
ASSIGNMENT – II

Answer all the questions

Marks : 5 x 4 = 20

1. Construct the optimal Binary Search Tree given $n = 4$; $(a_1, a_2, a_3, a_4) = (1, 3, 3, 7)$ (do if read while) $p(1:4) = (3, 3, 1, 1)$ and $Q(0:4) = (2, 3, 1, 1, 1)$.
2. Give the state space tree generated in the process of First-in-First-out search and Bound search method for 8-queens problem.

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3. Draw a portion of the state space tree generated by LCBB for the following Knapsack problem.
 $N = 5$, $(p_1, p_2, p_3, p_4, p_5) = (10, 15, 6, 8, 4)$ $(w_1, w_2, w_3, w_4, w_5) = (4, 6, 3, 4, 2)$ and $m = 12$.
4. State and explain Cook's theorem.
5. Write and explain non-deterministic sorting algorithm

MCA-II YEAR
INFORMATION SYSTEM CONTROL AND AUDIT
ASSIGNMENT – I

CDE – 206 **Marks : 5 x 4 = 20**

Answer all the questions

- 1) a) What are the major objectives of information system auditing? Explain four of these objectives.
b) Explain the contribution of information system management and behavioral science to information system auditing.
- 2) a) Explain the purpose served by factoring a system into a number of subsystem. What should be the basis of factoring?
b) Briefly explain the necessity for control and audit of computer system.
- 3) a) Write brief notes on the planning and organizing functions of an information audit system.
b) Explain the advantage of centralized programming.
- 4) a) How do you manage a programming group for an information system design? Explain in detail.
b) Write brief notes on the control functions of an information audit system.
- 5) a) Explain the functions of a Data Administrator (DA) and database administrator with respect to concurrency control and existence control.
b) What are the different threats to the physical security of information systems? Write brief notes on these threats.

MCA-II YEAR
INFORMATION SYSTEM CONTROL AND AUDIT
ASSIGNMENT – II

CDE – 206 **Marks : 5 x 4 = 20**

Answer all the questions

- 1 a) Write about Communication Subsystem exposures.
b) Explain the controls over Subversive threats.
- 2 a) Explain the motivation for using Audit software.
b) List the benefits and limitations of Audit Software.
- 3 a) Write about the Utility software used in Evidence collection.
b) Why do we need Specialized Audit Software?
- 4 a) Write the need for Concurrent Audit Software.
b) Write a paragraph about various types of concurrent Audit Software.
- 5 a) Write about Staffing and Leading functions in Managing as IS Audit.
b) Write about Standards and Procedures laid down by ISACA (Information System Audit and Control Association).

