R20

MCA II SEM

SUPPLEMENTARY EXAMINATIONS

MARCH 2025

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R20MCA201

MCA - II Semester Supple Examinations,March-2025

COMPUTER NETWORKS

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Differentiate between Narrowband and Broadband ISDN.
   (b) List out the ALOHA protocols.
   (c) Differentiate between adaptive and non-adaptative routing.
   (d) Draw ATM Cell format.
   (e) Define RPC.
   (f) What is Cryptography?

[2+2+2+2+2+2]

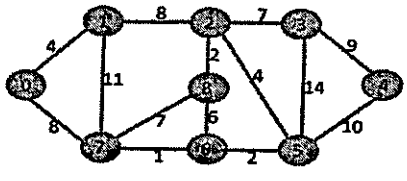
PART-B

4X 12 = 48

2. (a) Discuss about various transmission medias operations with the significant features.
   (b) Consider the following message frame 1101011011. Identify the Cyclic Redundancy Code (CRC) to the message frame using the generator polynomial x4+x+1 and solve whether the frame is error free or not for the given generator polynomial.

3. (a) Explain Ethernet, Token Bus and Bridges
   (b) List the assumptions for Dynamic Channel Allocation. Illustrate CSMA/CD protocol in action.

4. (a) For the following graph, calculate the shortest path from Node 0 to Node 4 using Dijkstra's shortest path algorithm.



   (b) Discuss about the General principles of congestion control and prevention policies.

5. (a) Illustrate the operations of different components and stages of OSPF in detail.
   (b) Explain in detail about the quality of service evaluation and improvement approaches in the network layer.

6. (a) Illustrate the functioning of the transport protocols elements.
   (b) Demonstrate the header format of a user datagram protocol (UDP) along with its services.

7. (a) Illustrate the functioning of RSA algorithm with a neat flowchart using the following parameters: P=7; q=11; e=17; M=8
   (b) How Domain name system will works? Explain with examples.

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R20MCA202

MCA - II Semester Supple Examinations, March-2025

OBJECT ORIENTED PROGRAMMING USING JAVA

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Write about method binding and overriding.
   (b) Difference between type conversion and casting.
   (c) List the forms of inheritance.
   (d) Cite the differences between multitasking and multithreading.
   (e) Write the AWT class hierarchy.
   (f) List the differences between Swing and AWT.

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. (a) Write the differences between procedural programming and object oriented programming languages.
   (b) Write the principles and applications of OOP and explain briefly.

3. (a) Create a class called Employee to store empno, name and salary. Also add three behaviours such as read(), display() and salary() to read, display and to return the salary of employee. In the main() method class, read 'n' employee details, print the employee details and also find the average salary of the employees.
   (b) Illustrate the overloading of constructors with simple example.

4. (a) Explain the use of super keyword to call the parent class constructor (parameterized) with an example program.
   (b) "Final keyword can be used to prevent method overriding and to stop inheritance". Support this with an example programs.

5. (a) "The keyword **synchronized** in JAVA can be used for cooperation among threads". Justify this statement with a simple example.
   (b) Illustrate the procedure of creating customized exception with an example program.

6. (a) Write the purpose of layout managers in JAVA. Illustrate any two with simple examples.
   (b) Write the purpose of Adapter class in JAVA. Give one example to handle mouse events, by using adapter class.

7. (a) How parameters can be passed to applet? Demonstrate with an example.
   (b) Illustrate the uses of the following Swing components with examples:
   i. JCheckBox ii. JScrollPane

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R20MCA203

MCA - II Semester Supple Examinations, March-2025

SOFTWARE ENGINEERING

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a)What are the characteristics of Software?
   (b)What are the advantages and disadvantages of Waterfall model?
   (c)What are the elements of design model?
   (d)Define Context model?
   (e) What does Validation represent?
   (f) Define Risk Management?

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. (a) Define software engineering. What are the challenges of software engineering? [6M]
   (b) Explain about evaluation of software engineering methodologies. [6M]

3. (a) With suitable illustration explain SPIRAL model evolutionary software development. [6M]
   (b) Explain software Requirements engineering processes. [6M]

4. (a) Briefly Explain Software design process. [6M]
   (b) Demonstrate the concept of Architectural Design. [6M]

5. (a) How we can identify the object's classes? Explain. [6M]
   (b) Explain the importance of data abstraction and encapsulation in object-oriented design. [6M}

6. What is the process of software testing? Explain the different testing methods illustrating their importance. [12M}

7. (a) Discuss different Risk Management strategies? [6M]
   (b) List and explain different Quality Management Standards. [6M}

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R20MCA204

MCA - II Semester Supple Examinations,March-2025

DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define Algorithm
(b) Differentiate between Merge Sort and Quick Sort algorithm.
(c) Define Minimum Cost Spanning Trees.
(d) What is Reliability?
(e)Define Hamiltonian Cycle.
(f) What is Cooks Theorem?

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. (a) Explain asymptotic notations with examples

3. (a) Explain Merge sort algorithm and derive its time complexity.
(b) Derive the time complexity of Strassen's Matrix multiplication using recurrence relation.

4. (a) Define Spanning tree? Explain Kruskal's Algorithm with suitable example.
(b) Find the Optimal solution for given Knapsack instances using greedy method
N=4, M=20, (P1,P2,P3,P4)=(25,24,15,18), (W1,W2,W3,W4)=(18,16,10,15).

5. Consider three stages of a system with r1=0.3, r2=0.5, r3=0.2 and c1=30, c2=20, c3=30, Where the total cost of the system is C=80 and u1=2, u2=3, u3=2. Find the reliability design.

6. (a) Explain 4-Queen's problem using backtracking and Draw the state space tree by taking implicit constraint, explicit constraint and bounding functions.
(b) Describe the Backtracking technique for Hamiltonian Cycle. Explain an example with algorithm.

7. Solve the following instance of 0/1 knapsack problem using FIFO Branch and Bound technique and draw the portion of the state space tree. N=4, (p1,p2,p3,p4)=(10,6,8,11), (w1,w2,w3,w4=8,9,5,6), m=12.

***

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R20MCA207

MCA - II Semester Regular Examinations, March-2025

DATA WAREHOUSING AND DATA MINING

Time: 3 hours **Max Marks: 60**

Question Paper Consists of **Part-A** and **Part-B.**

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Write about Knowledge discovery process from databases.
   (b) What is discretization?
   (c) Compare roll-up and drill-down operations.
   (d) Define hyperplane in SVM.
   (e) Explain Candidate generation & pruning.
   (f) What is Agglomerative Hierarchical Clustering?

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. (a) Write about Data Mining primitive tasks.
   (b) Explain different types of attributes in data mining with examples.

3. (a) Describe different types of pre-processing methods in data mining.
   (b) How to measure similarities and dissimilarities among data objects? Explain.

4. (a) Explain different types of schemas in multidimensional data model.
   (b) With a neat sketch describe the three-tier data warehouse architecture.

5. (a) List and explain different measures for selecting best split in decision tree classification method.
   (b) Explain Naïve Bayesian classifier.

6. (a) Illustrate the frequent item set generation process in FP-Growth algorithm.
   (b) Explain Apriori Algorithm with Example.

7. (a) What is cluster analysis? Explain the basic K-means algorithm with example.
   (b) Write about DBSCAN algorithm, its Strengths and Weaknesses.

***