



MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY **(Autonomous Institution – UGC, Govt. of India)**

Sponsored by CMR Educational Society

(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – „A“ Grade - ISO 9001:2015 Certified) Maisammaguda, Dhulapally (Post Via Hakimpet), Secunderabad – 500100, Telangana State, India.
Contact Number: 040-23792146/64634237, E-Mail ID: mrcet2004@gmail.com, website: www.mrcet.ac.in

DEPARTMENT OF INFORMATION TECHNOLOGY **II B.TECH II SEMESTER PREVIOUS QUESTION PAPERS**



LIST OF SUBJECTS

CODE	NAME OF THE SUBJECT
R15A0508	DESIGN AND ANALYSIS OF ALGORITHMS
R15A0509	DATABASE MANAGEMENT SYSTEMS
R15A0506	FORMAL LANGUAGE AND AUTOMATA THEORY
R15A0507	JAVA PROGRAMMING
R15A0061	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
R15A0511	SOFTWARE ENGINEERING

Code No: R15A0508

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular/Supplementary Examinations, April/May 2018

Design and analysis of Algorithms

(CSE & IT)

Roll No									
----------------	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) General strategy of divide and conquer 2M
- (b) What are the performance analysis techniques of an algorithm? 3M
- (c) What is union and find? 2M
- (d) Explain bi connected components. 3M
- (e) What is job sequencing with deadlines? 2M
- (f) What is greedy method? 3M
- (g) What is a graph coloring problem? 2M
- (h) What is general backtracking method? 3M
- (i) What is the difference between NP hard and NP Complete problem? 2M
- (j) List the advantages of dynamic programming. 3M

PART – B**(50 Marks)****SECTION – I**

2. Explain in detail about asymptotic notations. 10M

(OR)

3. Explain Merge sort technique. Give the time complexity of merge sort. 10M

SECTION – II

4. Explain the following graph traversal

- (a) Depth First search 5M
- (b) Breath First search. 5M

(OR)

5. Write short notes on

- a) Game trees 5M
- b) AND/OR graphs 5M

SECTION – III

6. How do you construct a minimum Spanning tree using kruskals algorithm explain? List any two applications. [10M]

(OR)

7. State dynamic programming. Explain with one application. 10M

SECTION – IV

8. Explain the Travelling salesmen problem using Branch and bound technique. 10M

(OR)

9. Give the solution to the 8 queen's problems using backtracking. 10M

SECTION – V

10. Discuss in detail about the class P, NP, NP-hard and NP-complete problems. Give examples for each class. 10M

(OR)

11. (a) Write and explain the Cook's theorem. 5M
(b) What is non deterministic algorithm explain. 5M

Code No: R15A0509

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**(Autonomous Institution – UGC, Govt. of India)****II B.Tech II Semester Regular/Supplementary Examinations, April/May 2018****Database Management Systems****(CSE & IT)**

Roll No									
----------------	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

- 1.(a) Differentiate between conceptual data independence and physical data independence.[2M]
- (b) Specify two kinds of constraints with respect to 'ISA' hierarchies/relationship. [3M]
- (c) What is the difference between UNIQUE key and Primary Key in relational Model? [2M]
- (d) Discuss the notations in ER-Diagram[3M]
- (e) What is foreign key? [2M]
- (f) What is the difference between UNION and UNION ALL in SQL?[3M]
- (g) Define the term ACID properties.[2M]
- (h) What are two types of lock-based protocols?[3M]
- (i) What is called a query –execution engine?[2M]
- (j) Compare sequential access file versus random access files.[3M]

PART – B**(50 Marks)****SECTION – I**

- 2.(a) What are the Different types of Data Models? Explain about Relational Model? [5M]
- (b) Why would you choose a database system instead of file system? [5M]

(OR)

3. What is DBMS? Explain architecture of DBMS with diagram. [10M]

SECTION – II

- 4(a). Consider the following tables: [4M]

Employee (Emp_no, Name, Emp_city)

Company (Emp_no, Company_name, Salary)

- i. Write a SQL query to display employee name, employee city, company name and salary of all the employees whose salary >10000
 - ii. Write a query to display all the employees working in 'XYZ' company.
- (b) Explain various DML commands with neat syntax. [6M]

(OR)

- 5.(a) What is view in SQL? How is it defined? [5M]
- (b) .What are aggregate functions? And list the aggregate functions supported by SQL? [5M]

SECTION – III

- 6.(a) Why normalization is required? And explain different types of normal forms[5M]
- (b) Define BCNF .How does it differ from 3NF [5M]

(OR)

7(a) .What is meant by lossless-join decomposition? [5M]

(b). Explain 2NF and 3NF in detail. [5M]

.

SECTION – IV

8. (a) Explain Time stamp-Based Concurrency Control protocol [5M]

(b) Explain remote backup system [5M]

(OR)

9. (a) Explain about validation based protocols. [5M]

(b) Discuss on strict, two-phase locking protocol [5M]

SECTION – V

10. Explain static and dynamic Hashing Techniques? [10M]

(OR)

11. Explain in detail insertion methods B+ tree index files with example.[10M]

Code No: R15A0506

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular/Supplementary Examinations, April/May 2018**Formal Language and Automata Theory****(CSE & IT)**

Roll No										
----------------	--	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) Define NFA. (2M)
- (b) List out the applications of a Finite Automata. (3M)
- (c) Define Regular Expression with an example. (2M)
- (d) List out the closure properties of regular sets. (3M)
- (e) State Pumping lemma for CFL's. (2M)
- (f) Define a right linear grammar with an example. (3M)
- (g) What do you understand by the term LBA? (2M)
- (h) Show the acceptance of PDA by empty stack. (3M)
- (i) Define PCP and MPCP. (2M)
- (j) Define turning machine. How a TM accepts a language? (3M)

PART – B**(50 Marks)****SECTION – I**

2. a) Construct a DFA equivalent to the regular expression $10+(0+11)0^*11+00$ (5M)
- b) Explain Chomsky Hierarchy. (5M)

(OR)

3. a) Design a DFA for the following language, also give the transition diagram and the regular expression.

$$L = \{ 0^m 1^n \mid m \geq 0 \text{ and } n \geq 1 \} \quad (5M)$$

- b) Find DFA equivalent to NFA, described by the following state transition table.

$$I.S=p, F.S=\{q, s\} \quad (5M)$$

$\begin{array}{c} \text{Q} \\ \diagdown \end{array} \Sigma$	0	1
$\longrightarrow p$	{q, s}	q
	r	{q, r}
r	s	p
	-	p

SECTION – II

4. Consider the following regular expression and construct the finite automaton

- a) $a + b$ b) $(a + b)^*$
c) $a(a + b)^*$ d) $a(a + b)^*b$ e) $b+ba$ (10M)
(OR)

5. a) Convert the R.E. $= (a+b)^*$ into DFA (5M)

b) Explain the steps to construct a FA for a given regular expression. (5M)

SECTION – III

6. a) Construct right-linear and left-linear grammars for the following regular expression.

$A_0 \rightarrow aA_1, A_1 \rightarrow bA_1, A_1 \rightarrow a, A_1 \rightarrow bA_0$ (5M)

b) Construct the left-most and right-most derivations and parse trees for the following grammar

$S \rightarrow aB \mid bA$
 $A \rightarrow aS \mid bAA \mid a$
 $B \rightarrow bS \mid aBB \mid b$ which accepts the string “aaabbabbba”. (5M)
(OR)

7. a) Construct a DFA for the following regular grammar

$S \rightarrow Aa$
 $A \rightarrow Sb \mid Ab \mid \epsilon$ (5M)

b) Convert the given grammar to GNF.

$S \rightarrow AB$
 $A \rightarrow BS \mid b$
 $B \rightarrow SA \mid a$ (5M)

SECTION – IV

8. a) Obtain the PDA accept the language $L = \{w \mid w \in (a, b)^* \text{ and } n_a(w) > n_b(w)\}$ i.e., number of a's in 'w' is greater than number of b's in 'w'. (5M)

b) Define Push Down Automata. Explain how CFG is accepted by PDA. (5M)
(OR)

9. a) Design a PDA which accepts strings of the language $\{0^n 1^n \mid n \geq 1\}$ (5M)

b) Convert the following grammar to PDA.

$S \rightarrow aAD$
 $A \rightarrow aB \mid bAB$
 $B \rightarrow bBB \mid a$ (5M)

SECTION – V

10. a) Explain about different types of Turing machines. (5M)

b) Find whether the post correspondence problem $P = \{(10, 101), (011, 11), (101, 011)\}$ has a match. Give the solution. (5M)

(OR)

11. a) Construct LR(0) items for the grammar given, find its equivalent DFA. Check the parsing by taking a suitable derived string.

$S^1 \rightarrow S$
 $S \rightarrow AS \mid \epsilon$
 $A \rightarrow aA \mid b$ (6M)

b) Explain the Churches' hypothesis. (4M)

Code No: R15A0507

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular/Supplementary Examinations, April/May 2018**Java Programming**

(CSE & IT)

Roll No									
----------------	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) Distinguish between C++ and JAVA [2M].
- (b) What is nested class in java? [3M]
- (c) How do java programs maintain platform independency with the help of JVM? [2M]
- (d) Write short note on Interface. [3M]
- (e) What is CLASSPATH ? [2M]
- (f) Explain the life cycle of an applet. [3M]
- (g) What is synchronization? [2M]
- (h) Differentiate AWTs and swings [3M]
- (i) Write short notes this keyword? [2M]
- (j) Explain the life cycle of thread [3M]

PART – B**(50 Marks)****SECTION – I**

2. A) How do java programs maintain platform independency with the help of JVM? [5M]
- B) Explain the constructor over loading with example? [5M]

(OR)

3. A) What are the benefits of Object Oriented Programming? [5M]
- B) Explain the access specifiers of java language with examples. [5M]

SECTION – II

4. Define Inheritance? What are the different types of Inheritances? Explain. [10M]

(OR)

5. Explain the concepts of encapsulation, inheritance, dynamic binding and message communication using an example(s). [10M]

SECTION – III

6. What are different types of exceptions in Java? Why do you need to catch an exception in Java? Explain. [10M]

(OR)

7. What is the difference between multiprocessing and multithreading? What is to be done to implement these in a program? [10M]

SECTION – IV

8. Write a program that reads from the user the name of a text file, counts the word frequencies of all words in the file, and outputs a list of words and their frequency. [10M]

(OR)

9. Discuss the four types of JDBC drivers with suitable diagrams. [10M]

SECTION – V

10. Develop an applet program to change the foreground and background colors and to display the message in the order in which the init(), start() and paint() methods are called. [10M]

(OR)

11. Explain briefly any four layout managers in Java with examples. [10M]

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular/Supplementary Examinations, April/May 2018**Managerial Economics and Financial Analysis****(CSE & IT)**

Roll No										
----------------	--	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks

PART – A**(25 Marks)**

1. (a) Differentiate between microeconomics and macroeconomics. (2M)
- (b) State the various exceptions to law of demand. (3M)
- (c) Discuss about Cobb-Douglas production function. (2M)
- (d) What is Isoquant and Isocost?. (3M)
- (e) Define monopoly. (2M)
- (f) Explain price discrimination. (3M)
- (g) What do you understand by trial balance? (2M)
- (h) Define Market penetration?. (3M)
- (i) What is meant by Payback method? (2M)
- (j) Define capital budgeting. (3M)

PART – B**(50 Marks)****SECTION – I**

2. Define Managerial Economics? Explain its nature and scope with appropriate examples.(10M)

(OR)

3. Explain the different degrees of price elasticity with suitable diagrams. (10M)

SECTION – II

4. Discuss about economies and diseconomies of scale . (10M)

(OR)

5. Define break-even point. Discuss break-even analysis with an example. (10M)

SECTION – III

6. State the merits and demerits of sole trading and partnership of business. (10M)

(OR)

7. Explain how a firm attains equilibrium in the short run and in the long run under conditions of perfect competition. (10M)

SECTION – IV

8. Define Account. Illustrate different types and principles of Accounts (Rules of Debit and Credit). (10M)

(OR)

9. From the following information, calculate NPV & Decide the project criteria.

Year	Project-A	Project-B
1	90000	160000
2	160000	120000
3	120000	50000
4	70000	70000

The cost of the project is Rs. 2, 50,000, discount factor is 10 %

SECTION – V

10. Discuss different types of Ratios. (10M)

(OR)

11. Define Ratio Analysis. Describe the advantages/significance and limitations of Ratio Analysis(10M)

Code No: R15A0511

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular/Supplementary Examinations, April/May 2018**Software Engineering****(IT)**

Roll No									
----------------	--	--	--	--	--	--	--	--	--

Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) List out the Software myths (2M)
- (b) Explain about the process framework (3M)
- (c) Discuss about the software requirement specification. (2M)
- (d) Illustrate the Requirements elicitation (3M)
- (e) Explain about the golden rules of user interface design. (2M)
- (f) Explain about Design evaluation. (3M)
- (g) Discuss about the art of Debugging. (2M)
- (h) Explain about the Software Quality. (3M)
- (i) Discuss about the Formal technical reviews. (2M)
- (j) Explain about the Statistical Software quality Assurance. (3M)

PART – B**(50 Marks)****SECTION – I**

2. Write short notes on Process patterns, process assessment. (10M)

(OR)

3. Discuss about the waterfall model with figure. (10M)

SECTION – II

4. Write short notes on Context Models and Behavioral models. (10M)

(OR)

5. Explain about the Data models and Object models. (10M)

SECTION – III

6. Explain about the various design concepts. (10M)

(OR)

7. Explain about the User interface analysis and design. (10M)

SECTION – IV

8. Discuss about the Metrics for testing and source code (10M)

(OR)

9. Explain about risk management process. (10M)

SECTION – V

10. Explain about the Software reliability. (10M)

(OR)

11. Discuss about the ISO 9000 quality standards. (10M)
