



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

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



LIST OF SUBJECTS

CODE	NAME OF THE SUBJECT
R17A0508	DESIGN AND ANALYSIS OF ALGORITHMS
R17A0509	DATABASE MANAGEMENT SYSTEMS
R17A0506	FORMAL LANGUAGE AND AUTOMATA THEORY
R17A0051	INTELLECTUAL PROPERTY RIGHTS
R17A0507	JAVA PROGRAMMING
R17A0511	SOFTWARE ENGINEERING

Code No: R17A0508**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****II B.Tech II Semester Regular Examinations, April/May 2019****Design and Analysis of Algorithms****(CSE & IT)**

Roll No										
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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 a. Explain about Psuedo code for expressing algorithms [7M]
 b. Define an algorithm and write the characteristics of algorithm. [7M]

OR

- 2 a. Describe performance analysis, space complexity and time complexity. [7M]
 b. Differentiate between probabilistic analysis and amortized analysis. [7M]

SECTION-II

- 3 a. Illustrate the general method of divide and conquer technique. [7M]
 b. Write an algorithm for Binary search and discuss its complexity. [7M]

OR

- 4 a. Explain knapsack problem in Greedy method [7M]
 b. Explain algorithm for Job sequencing with deadlines [7M]

SECTION-III

- 5 Explain Matrix chain multiplication in dynamic programming. [14M]

OR

- 6 Explain 0/1 knapsack problem dynamic programming. [14M]

SECTION-IV

- 7 a. Write a depth first search algorithm for graph traversal. [7M]
 b. Discuss about AND / OR graphs and game trees [7M]

OR

- 8 a. Define graph coloring and write an algorithm to find Hamiltonian cycles. [7M]
 b. Compare and contrast between connected components and bi connected components. [7M]

SECTION-V

- 9 a. Explain FIFO Branch and Bound solution. [7M]
 b. Differentiate between NP - Hard and NPComplete classes. [7M]

OR

- 10 a. Explain 0/1 knapsack problem in Branch and Bound technique. [7M]
 b. Discuss about general method of branch and bound technique. [7M]

Code No: R17A0509**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****II B.Tech II Semester Regular Examinations, April/May 2019****Database Management Systems****(CSE & IT)**

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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1.a. Compare and Contrast file Systems with database systems? [5M]
- b. Discuss about different types of Data models? [9M]

OR

- 2.a. Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set? [8M]
- b. What is relation? Differentiate between a relation schema and relation instance. Define the term arity and degree of a relation. [6M]

SECTION-II

- 3.a. Illustrate different set operations in relational algebra with an example? [6M]
- b. Explain different types of joins with examples? [8M]

OR

4. There are two tables EmployeeDetails(empid,fullname,managerid,dateofjoining), EmployeeSalary(empid,project,salary) . [14M]
 - a) Write a SQL query to fetch employee names having salary greater than or equal to 5000 and less than or equal 10000.
 - b) Write a SQL query to fetch project-wise count of employees sorted by project's count in descending order.
 - c) Write a SQL query to fetch only even rows from table.

SECTION-III

- 5.a. Define decomposition and how does it address redundancy? Discuss the problems that may be caused by the use of decompositions? [9M]
- b. Define functional dependencies. How are primary keys related to FD's? [5M]

OR

6. a. Is the decomposition in 4NF always dependency preserving and lossless? Explain with an example, [8M]
- b. Differentiate between FD and MVD? [6M]

SECTION-IV

- 7.a. Illustrate concurrent execution of transaction with examples? [5M]
- b. Describe Timestamp based locking protocols? [9M]

OR

8. Consider the transactions T1, T2, and T3 and the schedules S1 and S2 given [14M]

below.

T1: r1(X);r1(Z);w1(X);w1(Z)

T2: r2(Y);r2(Z);w2(Z)

T3: r3(Y);r3(X);w3(Y)

S1: r1(X);r3(Y);r3(X);r2(Y);r2(Z);

w3(Y);w2(Z);r1(Z);w1(X);w1(Z)

S2: r1(X); r3(Y); r2(Y); r3(X); r1(Z);

r2(Z); w3(Y); w1(X); w2(Z); w1(Z)

Analyze which one of the schedules is conflict-serializable?

SECTION-V

- 9.a. Write in detail about Hash based Indexing and Tree based Indexing? [8M]
b. Compare I/O costs for all file organizations? [6M]

OR

- 10.a. Explain about remote backup systems. [7M]
b. Describe about ARIES algorithm in detail. [7M]

Code No: R17A0506**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****II B.Tech II Semester Regular Examinations, April/May 2019****Formal Language and Automata Theory****(CSE & IT)**

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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1
 - (a) Define DFA with an example [4M]
 - (b) Construct DFA for the following: $L = \{w|w \text{ is in the form of 'X01Y' for some string X and Y consisting of 0's and 1's}\}$. [6M]
 - (c) Bring out the differences between Moore and Mealy machines? [4M]

OR
- 2
 - (a) List the applications of Finite Automata [4M]
 - (b) Construct a finite automata that accepts those strings over $\{a,b\}$ that contain 'aaa' as a substring. [5M]
 - (c) Design a Moore machine for residue mod 3 of the integer represented in binary [5M]

SECTION-II

- 3
 - (a) Construct NFA with ϵ for regular expression $(1+01+001)^*(\epsilon+0+00)$. [7M]
 - (b) Prove that the language $\{a^p|p \text{ is prime}\}$ is not regular. [7M]

OR
- 4
 - (a) List the applications of Regular Expressions [3M]
 - (b) Convert the regular expression $(01+0)^*$ to an ϵ -NFA.. [8M]
 - (c) Obtain the regular expression to generate strings of a's, b's and c's such that fourth symbol from the right is 'a' and ends with 'b'. [3M]

SECTION-III

- 5
 - (a) Define Context Free Grammar [3M]
 - (b) List the closure properties of CFLs [3M]
 - (c) Construct NFA for the grammar [8M]
 $S \rightarrow Ab|ab$, $A \rightarrow Ab|Bb$, $B \rightarrow Ba|a$

OR
- 6
 - (a) Convert the following CFG to GNF. [8M]
 $S \rightarrow AB$, $A \rightarrow BS|b$, $B \rightarrow SA|a$
 - (a) Convert the following CFG to CNF (Chomsky Normal Form) [6M]
 $S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a$
 $B \rightarrow aBB|bS|b$

SECTION-IV

- 7 (a) What is Instantaneous Description of PDA [4M]
(b) Design a push down automata which accepts equal number of a's and b's over $\Sigma = \{a, b\}$. Give Instantaneous Description for processing the string 'abbaab' [10M]

OR

- 8 (a) Construct a PDA equivalent to the following Grammar [6M]
 $S \rightarrow aAA, A \rightarrow aS | bS | a$
(b) Design a push down automata for set of all balanced parenthesis. [8M]

SECTION-V

- 9 (a) Design a Turing Machine to recognize the language $\{ a^n b^n c^n | n \geq 0 \}$ [8M]
(a) Briefly explain NP-complete and NP-hard problems [6M]

OR

- 10 (a) State Post's Correspondence Problem. Give an example [5M]
(b) Design a Turing Machine for palindromes over $\{a, b\}$ [9M]

Code No: R17A0051**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****II B.Tech II Semester Regular Examinations, April/May 2019****Intellectual Property Rights****(CSE, IT & AE)**

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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***********SECTION-I**

- 1 Explain the role and value of intellectual Property rights in international commerce. [14M]

OR

- 2 Explain with examples the emerging forms of Intellectual Properties [14M]

SECTION-II

- 3 Write the process of protecting Intellectual property? [14M]

OR

- 4 Describe the process involved in ownership transfer of Intellectual Property rights? [14M]

SECTION-III

- 5 Explain in detail IP rights in international forums [14M]

OR

- 6 What are the intellectual property rights? Bring out the need for protecting intellectual property [14M]

SECTION-IV

- 7 Write a short note on [7M]
a) Unfair competition. [7M]
b) Ownership transfer.

OR

- 8 Explain detail the terms and condition of joint collaboration agreement [14M]

SECTION-V

- 9 Explain the role of WTO in promoting IPR [14M]

OR

- 10 Explain international aspects of IPR related to trademarks and trade secrets. [14M]

Code No: R17A0507**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****II B.Tech II Semester Regular Examinations, April/May 2019****Java Programming****(CSE & IT)**

Roll No									
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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1.a. "Java is called Machine Independent language" - Justify this statement with proper explanation. [5M]
- b. What is an array? How arrays are declared and initialized? Explain with examples. [9M]

OR

- 2.a. Describe the characteristics of object oriented concepts? [8M]
- b. Write about the console input and output with an example? [6M]

SECTION-II

- 3.a. How can we restrict inheritance for a class? [6M]
- b. Java doesn't support multiple inheritance. Justify your answer with an example? [8M]

OR

- 4.a. What are the differences between Interface and Abstract class? [7M]
- b. What are the differences between this and super keyword? [7M]

SECTION-III

- 5.a. Write a Java program to synchronize the threads acting on the same object. (Note: The synchronized block in the program can be executed by only one thread at a time) [9M]
- b. What is thread synchronization? Discuss with an example. [5M]

OR

- 6.a. What are exception handling keywords in Java? Explain briefly. [9M]
- b. What is the difference between an exception and an error? Explain briefly. [5M]

SECTION-IV

- 7.a. Write a Java program to read content from one file and write it into another file. [8M]
- b. Write a Java program to get file creation, last access and last modification time . [6M]

OR

- 8.a. Explain different types of JDBC drivers with diagrams? [7M]
- b. Write a JDBC program for updating the data? [7M]

SECTION-V

- 9.a. What is the significance of Layout managers? Discuss briefly various layout managers. [8M]
- b. Write a program to create a frame for a simple arithmetic calculator using swing components and layout managers [6M]

OR

- 10.a. Explain the attributes of applet tags? [8M]
- b. Explain the methods that control an applet's on-screen appearance? [6M]

Code No: R17A0511

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular Examinations, April/May 2019**Software Engineering****(IT)**

Roll No									
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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 a. Interpret the unified process in process models with suitable example. [7M]
b. Interpret software myths in the development of software with suitable examples. [7M]
OR
- 2 a. Discuss Capability Maturity Model Integration (CMMI) with respect to generic view of process. [7M]
b. What is evolutionary process model and explain it with one example? [7M]

SECTION-II

- 3 a. Differentiate between functional and non-functional requirements in software engineering. [7M]
b. Discuss context models with respect to system models with appropriate example. [7M]
OR
- 4 a. What are behavioral models in the context of system models? [7M]
b. Differentiate between data models and object models with illustration. [7M]

SECTION-III

- 5 a. What is design process and explain it with respect to design engineering? [7M]
b. Illustrate design quality in the context of design engineering. [7M]
OR
- 6 a. How Software architecture is useful in creating an architectural design. [7M]
b. Analyze data design and architectural styles in software engineering process. [7M]

SECTION-IV

- 7 a. What is strategic approach to software testing and how it is helpful in building good software? [7M]
b. Analyze the role of metrics for software quality in the development of good software. [7M]
OR

- 8 a. Compare and contrast the validation testing and system testing. [7M]
b. Interpret the art of debugging in software testing methodology. [7M]

SECTION-V

- 9 a. Illustrate reactive vs. proactive risk strategies in risk management. [7M]
b. What is risk refinement and how it is useful in risk management. [7M]
OR
- 10 a. Discuss the procedure of formal technical reviews in testing the software. [7M]
b. Describe the importance of the ISO 9000 quality standards in improving software quality. [7M]
