PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS
ISO 9001: 2015 Certified

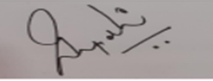### NOTICE

07th August, 2024

ATKT Internal Examination
B.Sc.I.T. (SEMESTER-I)

INSTRUCTIONS FOR THE STUDENTS HAVING ATKT IN INTERNALS:

1. Date of Submission of the Projects-20 August, 2024
2. Timings 12:00 PM to 1:00 Noon. Reporting time for students: at least 10 minutes before the mentioned time. Venue: Computer Lab.
3. Students have to be present in person for the submission.
4. Internal project topics are also uploaded on the college website.
5. Submission of projects or assignments to be done on proper A4 size paper, handwritten by the candidate himself only. The Front page should contain details of Roll no, Name of the student, Semester, Subject.
6. Print out of the questions uploaded should be attached along with the project.
   Students should enclose a photocopy of the ATKT fee paid receipt along with each of his projects.
7. On the date of submission there will be a viva voce on the given questions/topics.
8. If the student fails to present himself on the given date and time he will be marked ABSENT for the said subject.
9. Any Submissions after the above mentioned date and time will not be accepted and entertained under any circumstances.

   NOTE - Student who has paid ATKT fees for internal component but has not been allotted questions or has any query is requested to contact Ms. Rupali Mishra on or before, 10th August 2024 by mailing on bscit@dalmialionscollege.ac.in

Ms. Rupali Mishra	**CA. Durgesh Kenkre**	**Ms. Subhashini Naikar**	**Prof. (Dr.) D. N. Ganjewar**
(Coordinator - BSc IT)	**Exam Convener**	**Vice- Principal, SFC**	**(Principal)**

DI/N-STD/GEN/00

Subject Name	Roll No	Name of the student & Respective Questions
	153	VISHWAKARMA PRIYANSHU RAJESH 1. Define an algorithm and describe its significance in programming. 2. Discuss the evolution of the C programming language. 3. Explain the structure of a basic C program. 4. What are the main characteristics of a good program? 5. Differentiate between a compiler, linker, and preprocessor in C programming.
	160	SINGH NITESH MANOJ 1. Describe the role of pseudo code and flowchart symbols in program design. 2. List and explain the different components of the C character set. 3. What are identifiers and keywords in C? Provide examples. 4. Differentiate between data types and constants in C. 5. Explain typecasting in C with examples.
Programming Principles With C	170	SHAIKH AYAAN IQBAL 1. List and describe the different types of operators available in C. 2. Explain the precedence and order of evaluation of operators in C. 3. Discuss the use of increment and decrement operators with examples. 4. What is the conditional operator in C? Provide an example of its usage. 5. Explain the purpose of the break and continue statements in loops.
Digital Logic And Applications	153	VISHWAKARMA PRIYANSHU RAJESH 1. Convert the hexadecimal number 3F2A to its equivalent binary and decimal representations. Explain the conversion process in detail. 2. Given the binary number 1101.101, perform the conversion to both its decimal and hexadecimal forms. Describe each step of the conversion process. 3. Explain the difference between unsigned and signed binary numbers. How would you represent the signed binary number -23 in an 8-bit two's complement form? 4. Describe how binary-coded decimal (BCD) representation works. Convert the decimal number 87 to its BCD equivalent and explain the conversion. 5. Discuss how floating-point numbers are represented in binary. Provide a

		detailed example by converting the decimal number -12.375 into IEEE 754 single-precision format.
		SINGH NITESH MANOJ 1. Design a logic circuit using only NAND gates to perform the Boolean function F(A, B, C) = (A + B') * (B + C'). Provide the detailed logic circuit diagram and the simplification process. 2. Derive the Boolean expression for a 4-input majority gate and implement it using basic AND, OR, and NOT gates. Explain the simplification process and its application. 3. Apply the Quine-McCluskey method to minimize the Boolean function F(A, B, C, D) = Σ(1, 3, 7, 11, 15). Provide a step-by-step explanation of the minimization process and the final simplified expression. 4. Given the Boolean function F(A, B, C) = A'B + BC' + A'C, use Karnaugh maps to minimize the function. Draw the Karnaugh map and show all steps in the simplification process. 5. Design a 4-bit binary adder circuit using full adders. Explain the design process, including how carry propagation is handled, and provide a truth table to demonstrate the operation of the circuit.
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		VISHWAKARMA PRIYANSHU RAJESH 1. Explain the three levels of database architecture: internal, conceptual, and external. How do these levels interact with each other? 2. Discuss the differences between a relational database and a non-relational database system. Provide examples and scenarios where one might be preferred over the other. 3. Describe the concept of ACID properties in database transactions. Why are these properties crucial for database systems? 4. Explain the significance of database constraints in relational databases. Provide examples of primary key, foreign key, and unique constraints. 5. Design an Entity-Relationship (ER) model for a library management system. Include entities, relationships, and attributes. Convert this ER model into a relational schema.
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Fundamentals Of Database Management Systems		**SINGH NITESH MANOJ** 1. Compare and contrast the Enhanced Entity-Relationship (EER) model with the basic ER model. Provide examples of additional features introduced in the EER model. 2. Discuss the role of UML diagrams in database design. How can UML
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		diagrams be used to model database schemas and relationships?
		3. Define functional dependency and its significance in relational database design. Provide an example of how functional dependencies can be identified in a given schema.
		4. Explain the process of normalization and its importance. Perform normalization on the following unnormalized table to achieve Boyce-Codd Normal Form (BCNF): Orders(OrderID, CustomerID, CustomerName, ProductID, ProductName, Quantity)
		5. Discuss the concept of transitive dependency and its impact on database design. Provide an example of a transitive dependency and how it affects normalization.
	170	SHAIKH AYAAN IQBAL 1. Write an SQL query to find the second highest salary from an Employee table. Explain the logic behind your query. 2. Describe how SQL triggers work. Provide an example of a trigger that automatically updates a log table whenever a record is inserted into the Orders table. 3. Explain the differences between INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL OUTER JOIN with examples. How does each join type affect the result set? 4. Discuss the concept of query optimization in SQL. What are some common techniques used to optimize query performance? 5. Describe the different file structures used in databases. Explain how hashing and indexing improve the efficiency of data retrieval. Provide examples of hashing techniques and indexing strategies.
Computational Logic And Discrete Structures	138	PANDEY PRADEEPKUMAR VIJAYKUMAR 1. State and prove the Inclusion-Exclusion Principle for three sets. How does it extend to more than three sets? 2. Explain the concept of power sets. If SSS is a set with nnn elements, how many elements does its power set have? Provide a proof. 3. Define recursively defined functions and provide an example of a recursively defined function that calculates the nnn-th Fibonacci number. 4. Explain the concept of cardinality in set theory. How does the cardinality of infinite sets differ from that of finite sets? 5. Describe the process of polynomial evaluation using Horner's method.

		Why is Horner's method preferred over other polynomial evaluation methods?
	153	**VISHWAKARMA PRIYANSHU RAJESH** 1. Discuss the Euclidean algorithm for finding the greatest common divisor (GCD) of two integers. Provide a step-by-step example using the numbers 252 and 105. 2. Define sample space and events in probability theory. How would you calculate the probability of drawing a red card from a standard deck of 52 playing cards? 3. Explain what is meant by a finite probability space. Provide an example and describe how you would calculate probabilities within this space. 4. In an equiprobable space where each outcome is equally likely, how would you determine the probability of rolling a sum of 7 with two six-sided dice? 5. State and prove the Addition Principle for probability. How is it applied when calculating the probability of the union of two events?
	160	**SINGH NITESH MANOJ** 1. Define conditional probability and provide an example where conditional probability is used to calculate the likelihood of an event occurring given that another event has already occurred. 2. State and prove the Multiplication Theorem for conditional probability. How does this theorem help in calculating joint probabilities? 3. Discuss the concept of independent events in probability theory. Provide an example of two independent events and explain how their independence affects their joint probability. 4. In the context of repeated trials with two outcomes (e.g., flipping a coin), explain the Binomial distribution and its parameters. How would you calculate the probability of obtaining exactly 3 heads in 5 flips? 5. Apply the Sum Rule Principle to solve a problem where you need to determine the number of ways to choose either a red or a blue ball from a bag containing 5 red balls and 4 blue balls.
	170	**SHAIKH AYAAN IQBAL** 1. Describe the Product Rule Principle and provide an example involving the number of ways to arrange 3 books on a shelf given that you have 5 different books to choose from. 2. Explain the factorial function and its significance in counting problems.

		Compute the number of permutations of 7 distinct items.
		3. Define permutations and provide a detailed solution to a problem involving the number of ways to arrange 4 out of 7 distinct objects.
		4. Explain permutations with repetitions and provide an example where you calculate the number of distinct permutations of the word "COMPUTER" (where some letters repeat).
		5. Define combinations and solve a problem where you need to find the number of ways to choose 3 out of 10 different items.
		6. Discuss combinations with repetitions and solve an example problem where you calculate the number of ways to distribute 6 identical candies among 4 different children.
Technical Communication Skills	138	PANDEY PRADEEPKUMAR VIJAYKUMAR 1. Explain the process of communication and its importance in technical settings. How do encoding and decoding affect the effectiveness of communication? 2. Discuss the role of language as a tool of communication in technical contexts. How does language impact the clarity and precision of technical information? 3. Describe the different levels of communication and provide examples of how each level operates within an organization. 4. Explain the flow of communication within an organization. How do different communication networks affect organizational efficiency? 5. Discuss the importance of technical communication in professional settings. How does it contribute to the success of projects and business operations?
	170	SHAIKH AYAAN IQBAL 1. Define 'noise' in the context of communication. Classify different types of barriers and explain how they impact effective communication. 2. Define non-verbal communication and discuss its significance in enhancing verbal communication. How can non-verbal cues affect the interpretation of technical information? 3. Describe various forms of non-verbal communication, such as body language, facial expressions, and gestures. Provide examples of how these forms can be used to reinforce or contradict verbal messages. 4. Explain the different types of non-verbal communication, such as proxemics, kinesics, and chronemics. How can understanding these types

		improve technical communication?
		5. Discuss the Seven Cs of Effective Communication: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, and Correctness. Provide examples of how each can be applied in a technical document.
Programming Principles With C Practical	170	SHAIKH AYAAN IQBAL 1. Write an algorithm and draw flowchart for Area of circle. 2. Write an algorithm and draw flowchart to print the given no. is even or odd. 3. Write an algorithm and draw flowchart to print 1 to 10 numbers. 4. Write an algorithm and draw flowchart for sum of 1 to 5 numbers. 5. Write an algorithm and draw flowchart to compute the addition of digits of a given number.
	170	SHAIKH AYAAN IQBAL 1. Write a program using while loop to reverse the digits of a number. 2. Write a program to calculate the factorial of a given number. 3. Write a program to find the roots of quadratic equation. 4. Write a program to print the Fibonacci series. 5. Write a program in C to check entered character vowel or consonant
Fundamentals Of Database Management Systems Practical	160	SINGH NITESH MANOJ 1. Demonstrate any 3 practical examples on Database trigger
	170	SHAIKH AYAAN IQBAL 1. Demonstrate any 3 practical examples on Indexing in DBMS
Computational Logic And Discrete Structures Practical	170	SHAIKH AYAAN IQBAL 1. Explain ordered partitions and provide an example problem where you need to count the number of ways to partition the number 7 into 3 ordered parts. 2. Discuss unordered partitions and solve a problem where you find the number of ways to partition the set $\{1,2,3,4\}\backslash\{1, 2, 3, 4\}$ $\{1,2,3,4\}$ into 2 non-empty subsets. 3. Define paths and connectivity in a graph. Explain how you would

		determine if a graph is connected and provide an example of finding the shortest path in a weighted graph. 4. Describe the concept of a minimum spanning tree (MST) and provide an example using Kruskal's or Prim's algorithm to find the MST of a given graph. 5. Explain graph isomorphism and provide an example of two graphs that are isomorphic. How do you determine if two graphs are isomorphic?
	160	SINGH NITESH MANOJ 1. Describe the process of using spell check and grammar check tools in Microsoft Word. How can you customize the dictionary and set up automatic grammar suggestions to improve the quality of your document? 2. Create a formal letter and an informal letter using Microsoft Word. For the formal letter, include a header, footer, and a professional salutation. For the informal letter, use a more casual format and tone. Compare and contrast the formatting requirements for both types of letters. 3. Design a brochure and a flyer using templates in Microsoft Word. Explain the steps taken to customize the templates, including the insertion of images, text, and contact information. How do the design elements differ between a brochure and a flyer?
Technical Communication Skills Practical	170	SHAIKH AYAAN IQBAL 1. Using Microsoft Excel, import a dataset containing sales figures for the past year. Perform data analysis to calculate total sales, average sales per month, and identify the top 3 months with the highest sales. Demonstrate the use of Excel formulas and functions for these calculations. 2. Create a 'What-If' analysis scenario in Excel where you explore how changes in sales price affect total revenue. Use the Data Table feature to display different revenue outcomes based on various sales prices and quantities. 3. Generate and interpret different types of charts in Excel (pie chart, line chart, bar chart) using the same dataset. Explain how each type of chart is used to represent specific aspects of the data and how to choose the most appropriate chart type for various data analysis needs.