**13**

DE–2979

DISTANCE EDUCATION

B.Sc. (Computer Science) DEGREE EXAMINATION,   
MAY 2008.

DIGITAL COMPUTER FUNDAMENTALS

(2007 onwards)

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Explain the rules for binary subtraction using   
   1's and 2's complement methods. (7)
   1. (b) What is gray code? Why it is important? (5)
   2. (c) Convert the following to decimal
   3. (i)  (4)
   4. (ii)  (4)
2. (a) Perform the following binary arithemetic
   1. (i) 101.101–100.1 (5)
   2. (ii) 1111111001 (5)
   3. (b) Subtract the following using 2's complement method
   4. (i) 1101–1001 (5)
   5. (ii) 110111–11011 (5)
3. (a) Reduce the following Boolean expressions
   1. (i)  (5)
   2. (ii)  (5)
   3. (b) ‘‘Nor gate is a universal building block’’ – Justify. (10)
4. (a) Simplify the expression  using the K-map method. (12)
   1. (b) What is demultiplexer? Explain the difference between DMUX and MUX. (8)
5. (a) With diagram and truth table, explain the working of full adder. (10)
   1. (b) With diagram, explain how binary adder performs addition. (10)
6. (a) Discuss the difference between combinational and sequential circuits. (8)
   1. (b) With neat sketch and truth table, explain the   
      JK flip-flop. (12)
7. (a) With circuit diagram and truth table, explain UP/DOWN counters. (10)
   1. (b) Explain in detail about any two input and output methods. (10)
8. (a) What are the most significant development in software in third and fourth generation computer? Explain. (10)
   1. (b) Write short notes on :
   2. (i) Decoders. (5)
   3. (ii) Half subtractor. (5)

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DE–2980

DISTANCE EDUCATION

B.Sc. (Computer Science) DEGREE EXAMINATION,  
MAY 2008.

DATA STRUCTURES USING C

(2007 onwards)

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Describe the data types and their value ranges in C.   
    (10)
   1. (b) Explain all the operators in C. (10)
2. (a) Explain any 5 mathematical library functions in C.   
    (10)
   1. (b) Write a program to sort 5 names in alphabetical order. (10)
3. (a) Describe the general format of a function and write a function that returns number of characters in a given string.  
    (10)
   1. (b) Write short notes on pointers in C. (10)
4. (a) Explain loops in C and compare them. (10)
   1. (b) Explain condition checking statements in C. (10)
5. Explain linked list implementation of stack data structure and write procedures for its operations. (20)
6. Explain array implementation of queue and write necessary procedures. (20)
7. Explain how binary trees are used for sorting numbers. Write a program to illustrate. (20)
8. Write short notes on the following :
   1. (a) Header file
   2. (b) Macro
   3. (c) Files in C
   4. (d) Operator precedence.
9. ————————

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DE–2981

DISTANCE EDUCATION

B.Sc. DEGREE EXAMINATION, MAY 2008.

Computer Science

DISCRETE MATHEMATICS

(2007 onwards)

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Construct the truth table for the formula .
   1. (b) Obtain the PDNF for .
   2. (c) Derive , using the rule CP if necessary, from , .
2. (a) State and prove Distributive laws.
   1. (b) If R is given by the matrix , find the matrices of ,
   2. (c) Prove that the relation ‘‘congruence modulo *m*’’ over the set of positive integers is an equivalence relation.
3. (a) State and prove the associative law of composition of functions.
   1. (b) Let  be both one-to-one and onto functions. Then prove that .
   2. (c) Define  by recursion.
4. (a) Let *A* be a set with *n* elements
   1. How many binary operations can be defined   
      on *A*?
   3. (b) Define : semigroups, monoids, groups with examples.
5. (a) Show that the property of idempotency is preserved under a semi group homomorphism.
   1. (b) Show that the monoid homomorphism preserves the property of invertibility.
6. (a) Prove that a non-empty subset *H* of a group  will be a sub group of *G* if and only if  whenever .
   1. (b) State and prove Lagrange's theorem.
7. (a) Prove that in any graph, the number of vertices of odd is even.
   1. (b) Define isomorphic graphs. Give an example of non-isomorphic graphs. Justify.
8. (a) Prove that a simple graph with n-vertices must be connected if it has more than  edges.
   1. (b) State and prove the Cayley's theorem.

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DE–3627

**16**

DISTANCE EDUCATION

B.Sc. (CS) DEGREE EXAMINATION, MAY 2008.

C AND DATA STRUCTURES — LAB

(2007 onwards)

Time : Three hours Maximum : 100 marks

One question should be given to each candidate by lot system.

Answer BOTH subdivision (a) and (b).

Cut here

1. (a) Write a C program to calculate Compound interest
   1. (b) Write a C program to implement insert and delete operations on Queue using array concept.

Cut here

1. (a) Write a C program to sort 10 numbers in ascending order.
   1. (b) Write a C program for linked list implementation of Queue operations.

Cut here

1. (a) Write a C program to concatenate two given strings and find the length of the concatenated string.
   1. (b) Write a C program to implement push and pop operations on stack.
2. (a) Write a C program to compute commission earned by a salesman according to the scheme given below :
   1. Sales Amount Commission %
   2. Upto Rs. 5,000 0
   3. Above 5,000 to 10,000 5
   4. Above 10,000 10
   5. (b) Write a C program to sort a set of elements using insertion sort.

Cut here

1. (a) Write a C program to find the factorial of given number N using recursion.
   1. (b) Write a C program to evaluate the given mathematical expression using stack.

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DE–3665

DISTANCE EDUCATION

B.Sc. DEGREE EXAMINATION, MAY 2008.

Computer Science

OBJECT ORIENTED PROGRAMMING AND C++

(2007 onwards)

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.  
 (5 × 20 = 100)

1. (a) Describe the basic concepts of object-oriented programming. (12)
   1. (b) Illustrate with an example, how the endl and setw manipulator works. (8)
2. (a) What is a friend function? What are the merits and demerit of using friend function? (8)
   1. (b) Explain the different types of constructors in C++.   
       (12)
3. (a) Explain the use of pointers in C++. (6)
   1. (b) Create a class MAT of size m × n. Define all possible matrix operations for MAT type objects. (14)
4. (a) What is Compile time polymorphism? Explain with an example. (10)
   1. (b) Write a program to perform complex number arithmetic operations using operator overloading. (10)
5. (a) Explain the different types of inheritance supported by C++. (12)
   1. (b) When do you use a virtual function? Explain with suitable example. (8)
6. (a) Explain the loop structures available in C++. (10)
   1. (b) Write a program to print prime numbers between two limits. (10)
7. (a) Write a program in C++ to count the number of words in a line of text. (10)
   1. (b) How will you transfer values from derived class constructor to base class constructor? Explain with suitable illustration. (10)
8. (a) Describe the data types supported by C++. (10)
   1. (b) Write a program to arrange the given set of numbers in ascending order using pointer. (10)

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DE–3666

DISTANCE EDUCATION

B.Sc. DEGREE EXAMINATION, MAY 2008.

Computer Science

SCIENTIFIC COMPUTING

(2007 onwards)

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.  
 (5 × 20 = 100)

1. (a) Solve by Gauss-elimination method : (10)
   1. 
   2. (b) Solve by Gauss-Jacobi method of iteration : (10)
   3. 
2. (a) The following are data from the steam table :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Temperature : | 140 | 150 | 160 | 170 | 180 |
| Pressure : | 3.685 | 4.854 | 6.302 | 8.076 | 10.225 |

* 1. Using Newton’s formula, find the pressure of the steam for a temperature of 142. (10)
  2. (b) Derive the Lagrange’s interpolation formula. (10)

1. (a) Dividing the range into 10 equal parts, find the approximate value of  by Trapezoidal and Simpson’s 1/3 rule. (10)
   1. (b) The population of a certain town is given below. Find the rate of growth of the population in 1941 and 1961. (10)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year *x* : | 1931 | 1941 | 1951 | 1961 | 1971 |
| Population *y* : | 40.62 | 60.80 | 79.95 | 103.56 | 132.65 |

1. (a) Fit a straight line to the following data : (10)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *x* : | 0 | 5 | 10 | 15 | 20 | 25 |
| *y* : | 12 | 15 | 17 | 22 | 24 | 30 |

* 1. (b) State and prove Bayes Theorem. (10)

1. (a) The following mistakes per page were observed in a book :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. of mistakes : | 0 | 1 | 2 | 3 | 4 |
| No. of times the mistake occurred : | 211 | 90 | 19 | 5 | 0 |

* 1. Fit a Poisson distribution to the data. (10)
  2. (b) A bag contains 6 white, 4 red and 10 black balls. Two balls are drawn at random. Find the probability that they will both be black. (10)

1. (a) Describe the different types of random sampling.   
    (10)
   1. (b) A fertilizer mixing machine is set to give 12 kg of nitrate for every quintal bag of fertiliser. Ten 100 kg bags are examined. The percentage of nitrate is given below :
   2. 11, 14, 13, 12, 13, 12, 13, 14, 11, 12
   3. Is there reason to believe that the machine is defective? Value of  for 9 degrees of freedom is 2.262. (10)
2. (a) Two groups of 100 people each were taken for testing the use of vaccine. 15 persons contracted the disease out of the inoculated persons, while 25 contracted the disease in the other group. Test the efficiency of the vaccine using  test. (At 5% level for one degree of freedom the value of = 3.84) (10)
   1. (b) Describe the technique of analysis of variance. (10)
3. (a) Describe the different ways of representing the experimental data. (10)
   1. (b) Describe the Gauss-Jordon method. (10)

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DE–3667

DISTANCE EDUCATION

B.Sc. (Computer Science) DEGREE EXAMINATION,  
MAY 2008.

APPLICATION PROGRAMS

(2007 onwards)

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.  
 (5 × 20 = 100)

1. (a) What are the applications of Windows Desktop? (6)
   1. (b) Explain the File menu command. (10)
   2. (c) Explain the Task bar. (4)
2. (a) Explain the features of MS Word. (12)
   1. (b) Explain the Table Handling in MS Word. (8)
3. (a) Explain any four sub menu command in Tools menu. (10)
   1. (b) How to create, modify and printing a documents?   
       (10)
4. (a) Write short notes on :
   1. (i) Fill in data. (3)
   2. (ii) Entering formulas. (4)
   3. (iii) Find and replace. (4)
   4. (iv) Insert and delete rows and columns. (4)
   5. (b) Explain the conditional formatting and number formatting. (5)
5. Write short notes on:
   1. (a) Building an excel database. (5)
   2. (b) Add, edit and delete records. (6)
   3. (c) Search database. (4)
   4. (d) Sort database. (5)
6. (a) Explain the features of MS-POWER POINT. (10)
   1. (b) Explain the using design template. (6)
   2. (c) Write short notes on Run a presentation. (4)
7. (a) Explain the various data types in MS-ACCESS. (10)
   1. (b) How to adding, inserting and deleting a records? (10)
8. (a) Write short notes on “Forms”. (10)
   1. (b) How to combine excel data and charts with word documents? Explain. (5)
   2. (c) How to finding and sorting records. (5)
9. ————————

DE–3671

**26**

B.Sc. (Computer Science) DEGREE EXAMINATION,   
APRIL 2008.

LAB II — C ++ PROGRAMMING

(2007 onwards)

Time : Three hours Maximum : 100 marks

Examiner has to select ONE question for each student.

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1. (a) Write a C++ program to reverse the sentence and find the given sentence is Palindrome or not

(b) Imagine a publishing company that markets both books and audio – cassette versions of its works. Create a class publication that stores the title (a string) and price (type float) of a publication. From this class derive two classes:

BOOK, which adds a page count (type int) and TAPE, which adds a length count (type int). Each of these three classes should have a getdata( ) function too get its data from the user at the keyboard, and a putdata( ) function to display its data. Write a main( ) program to test the book and tape classes by creating instances of them, asking the user to fill in their data with getdata( ) and then displaying the data with putdata( ).

1. (a) Write a temperature conversion program that gives the user the opinion of Converting Fahrenheit to celcius or celcius to Fahrenheit. Then carry out the conversion using floating point numbers.

(b) Create a class called employee that contains a name and an employee number. Include a member function called getdata( ) to get data from the user, another function called putdata( ) to display the data. Write a main( ) program to exercise this class. It should create an array of type employee and then invite the user to input data for n employee.

1. (a) Write a program to process students’ marks with the help of classes. The class has private variables, for name, mark1, mark2, mark 3. It has two member functions–getdata( ) – to get input. – result( ) – to print the results. All subjects marks must be >= 50 for Pass otherwise Fail.

cut here

(b) Using operator overloading, write a C++ program to find the difference and total length of given two various tubes specified in meters and centimeters.

cut here

1. (a) Assumes you want to generate a table of multiples of any given number. Write a program that allows the user to the enter the number and then generate the table, formatting it into ten columns and 20 lines.

(b) Create a class DONOR that contains donor number, donor name, age, address, sex, blood group. Write a Menu driven C++ program to display the number, name and address of the donors for the following categories:

(i) blood donors having the blood group O+

* 1. (ii) blood donors in the age group between 16 to 25  
      (iii) female donors having blood group A in the age between 19 and 24.

1. (a) Using dynamic constructors write a C++ program to concatenate two given strings.
   1. (b) Using pointers create a class and write a program to get the n names and display them in sorted order.
2. (a) Using dynamic constructors write a C++ program to concatenate two given strings.

cut here

(b) Create a equivalent of a four – function calculator. The program should request the user to enter a number, an operator, and another number. It should then carryout the specified arithmetical operations: adding, multiplying, subtracting, and dividing the two numbers. Finally it should display the result. When it finishes the calculation, the program should ask if the user wants to do another calculation.

cut here

1. (a) Write a program using Polymorphism to calculate the square of any two numbers of type int, float, double and long.

(b) Create a class Int to Overload any two integer arithmetic operators (+ , - , \* , / and %) so that they operate on objects of type Int . If the result of any such arithmetic operation exceeds the normal range of Int’s – from –32,768 to 32,767 – have the operator print a warning and terminate the program. Write a program to test.

1. (a) Write a program that reads a group of numbers from the user and places them in array of type float. Once the numbers are sorted in the array, the program should average them and print the result. Use pointer notation whenever possible.

(b) Write a menu driven C++ program to add and subtract given two matrices of order m×n defined in class, using operator overloading.

cut here

1. (a) Create a class called employee that contains a name and an employee number. Include a member function called getdata( ) to get data from the user, another function called putdata ( ) to display the data. Write a main( ) program to exercise this class. It should create an array of type employee and then invite the user to input data for n employees.

(b) Write a C++ program to reverse the sentence and find the given sentence is Palindrome or not.

cut here

1. (a) Write a menu driven C++ program to add and subtract given two matrices of order m×n defined in class, using operator overloading.

(b) Assumes you want to generate a table of multiples of any given number. Write a program that allows the user to enter the number, and then generates the table, formatting it into ten columns and 20 lines.

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DE–3672

**27**

DISTANCE EDUCATION

B.Sc. (Computer Science) DEGREE EXAMINATION,   
MAY 2008.

LAB III — APPLICATION PROGRAMS

(2007 onwards)

Time : Three hours Maximum : 100 marks

Students has to answer TWO questions, by selecting ONE question from each section by lot.

cut here

SECTION A — (50 marks)

1. Create a table of student data that contains REGNO, NAME , ENGLISH, TAMIL and MATHS marks. Add a new column named TOTAL and find the row total for each student.

Add two rows named TOTAL, AVERAGE. Find the total and average values for each subject mark. Convert the table to text.

cut here

1. Create the following Inventory worksheet in   
   MS-EXCEL.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item No | Name | Price | Quantity purchased | Issued | Stock |
| 208 | Bolts | 5.00 | 500 | 200 | 300 |

* 1. (a) Enter all the data items except stock for 10 items.
  2. (b) Find stock using the formula
  3. Stock = Quantity Purchased -Issued
  4. Find total stock value in inventory as a product of stock and price. Display all the items in red color whose stock is below 200.

1. Draw Line, Bar, PIE charts for the data given below :

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | ABC COMPANY | LIMITED |
| YEAR | SALES | COST | PROFIT |
| 1991 | 1000 | 400 | 600 |

* 1. Add data for 10 years from 1991 to 2000. Provide titles, legends, grids and data Labels.

SECTION B — (50 marks)

cut here

1. Create employee table with the fields, Empno, Name, Age, sex, street , city, pincode salary.
   1. (a) Add data for 20 employees.
   2. (b) Write a query to display all the male employees whose salary is between 1000 and 5000 and living in city ‘‘CHENNAI’’.
   3. (c) Write a query to display all the female employees whose ages are in the range 50-60.
   4. (d) Show all the records in the table for the city ‘‘TRICHY’’ by filtering.

cut here

1. Create students table with the following fields Regno, Name, marks of maths, physics, chemistry. Create address table with fields Regno, street, city and pincode.
   1. (a) Write a query to display Regno, name and total of the three subject marks.
   2. (b) Write a query to display Regno, name ,street city, pincode and total of all the three subject marks.

cut here

1. Create two tables sales 1, sales 2 and join them to produce a Third table sales 3.

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