



B.Sc. I.T. (Part I) EXAMINATION, 2009

C-PROGRAMMING

Time allowed: Three Hours

Maximum Marks: 50

Attempt any *five* questions.

1. (a) State the difference between the declaration of a variable and the definition of a symbolic name. 2
(b) Which of the following arithmetic expressions are valid? If valid, give the value of the expression, otherwise give reason: 8
 - (i) $27 / 4 \% 3$
 - (ii) $+ 9/4 + 5$
 - (iii) $7.5 \% 3$
 - (iv) $12 \% 5 + 7 \% 2$
 - (v) $-14 \% 3$
 - (vi) $15.27 + -5.0$
 - (vii) $(5/3) * 3 + 5 \% 3$
 - (viii) $21 \% (\text{int}) \% 4.3$

2. (a) Describe the different types of data type used in C language. 4
(b) What do you understand by storage class of a variable? Explain each with suitable example. 6

3. A student has written the following function to perform binary search. Point out what is wrong, correct the mistake: 10

```
int * binary_search (given_num, table, n)
int given_num;
int table[ ];
int n;
{
    int * low = &table[n - 1];
    int * mid;
    while (low <= high)
    {
        mid = (low + high)/2;
        if (*mid < given_num)
            low = mid + 1;
```



```
        else if (*mid > given_num)
            high = mid - 1;
            else return (mid);
    }
    printf ("not found");
    return (NULL);
}
```

4. (a) What is the difference between nested calling and recursion? 4
(b) Write a recursive function in 'C' to reverse the digits of an integer. (e.g. 2567 > 7652). 6
5. (a) What are the advantages and disadvantages of C-pointers? What type of operations can be implemented on pointers? Explain through example. 5
(b) Implement a C language program recursively using pointer to test for a Palindrome. 5
6. Write short notes on the following: 10
(a) Static variable
(b) Structure
(c) Table look up fields
(d) Type conversion
(e) Library function
7. (a) What do you mean by zero based addressing? 2
(b) What are arrays? Show the storage of a two dimensional array in memory with the help of a diagram. Write a C program to multiply two matrices. 8
8. Write a function that accepts an array and a constant as input parameters and count how many elements of the array are less than constant, equal to it and greater than it. Return these a three element array parameter or by way of passes by reference parameter. 10
- 9 Two files PRA1 and PRA2 contain sorted list of integers. Write a program to produce a third file OUTF which holds a single sorted, merged list of these two lists. 10
- 10 (a) What is the difference between structure and union? 1
(b) Define a structure for a student having name, roll number and marks obtained in six subjects. Assume that "All student" is an array of students. Write C program to print



the name and roll numbers of the students who have secured highest marks in each subject.





B.Sc. I.T. (Part I) EXAMINATION, 2009
COMPUTING LOGICS AND REASONING

Time allowed: Three Hours

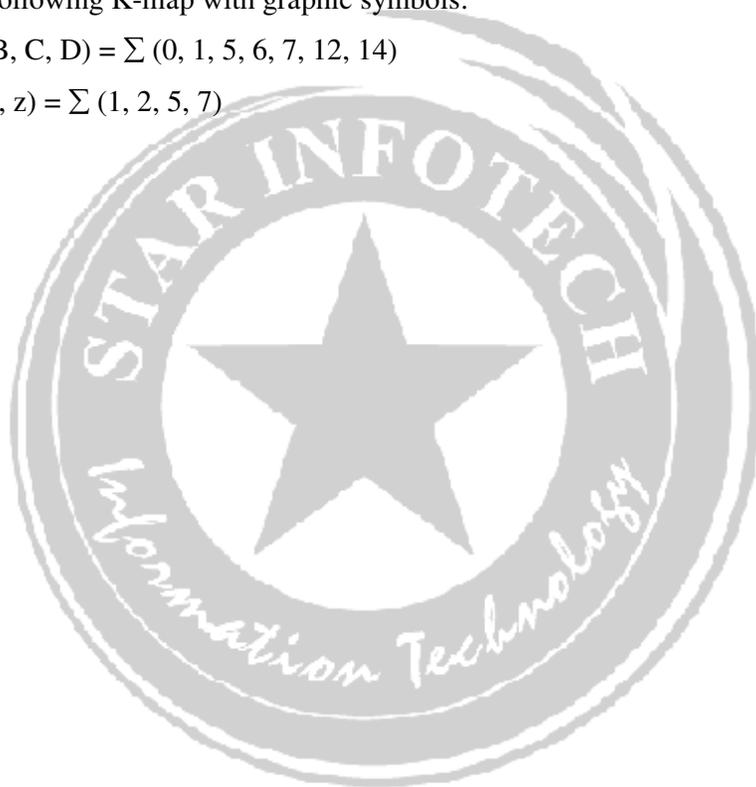
Maximum Marks: 50

Attempt any five questions. All questions carry equal marks.

1. Explain the logical implication with its truth table of two statements. Construct the truth table of the following compound propositions:
 - (a) $((p \rightarrow q) - r) \equiv p \rightarrow (q \wedge r \wedge p \wedge r)$
 - (b) $\sim (p \vee (q \wedge r)) \leftrightarrow ((p \vee q) \wedge (p \vee r))$
2. (a) What are complements? Give the corresponding complements of the following:
 - (i) $(160)_{10}$ to 9's and 10's complements.
 - (ii) 10110010 to 2's complement
 - (iii) 159 to 16's complement
 - (iv) 135 to 8's complement(b) In the set of natural show that the relation R defined as $a R b \Leftrightarrow a = b^k$, for a, b, k and N is a partial order relations.
3. (a) Prove that the composition of function is invertible and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$
(b) Find $f \circ h \circ g$ and $g \circ g$ for $f(x) = x - 2$,
 $g(x) = x^2 + 1$ and $h(x) = 3x$.
4. Prove the following laws:
 - (a) $(A - B) - C = (A - C) - (B - C)$
 - (b) $(A \cap B)^c = A^c \cup B^c$
5. Define:
 - (i) Greatest lower bound
 - (ii) Mapping
 - (iii) Linear ordered relation
 - (iv) Cartesian product set
 - (v) Gray codes and excess-3 codes
6. (a) What is the difference between relation and function?



- (b) In the set of integers, A relation R is defined such that a R b is 'a \equiv b mod 8'. Prove that relation R is an equivalence relation and find the equivalence class of R.
7. (a) Obtain the DNF of:
- (i) $(P \rightarrow Q) \rightarrow (P \rightarrow Q \wedge (\neg(\neg Q \vee \neg P)))$
 - (ii) $(P \wedge \neg(Q \wedge R \wedge P)) \vee \neg(P \rightarrow q)$
- (b) What is logical equivalence? Prove the following hypothesis whether valid or not:
- (i) $(p \rightarrow q) \wedge (p \rightarrow r) \equiv p \rightarrow (q \vee r)$
 - (ii) $(p \leftrightarrow q) \equiv (p \rightarrow q) \wedge (q \rightarrow p)$
8. (a) What are bounded lattices? Explain.
- (b) Solve the following K-map with graphic symbols:
- (i) $F(A, B, C, D) = \sum (0, 1, 5, 6, 7, 12, 14)$
 - (ii) $F(x, y, z) = \sum (1, 2, 5, 7)$





B.Sc. I.T. (Part I) EXAMINATION, 2009
DATABASE MANAGEMENT SYSTEM

Time allowed: Three Hours

Maximum Marks: 50

Attempt any five questions.all questions carry equal marks.

1. (a) What is dbms? Define database system architecture in brief and also explain the characteristics of DBMS.
(b) What is the role of administrator in DBMS?
2. (a) Construct E-R diagram for a car insurance company having more than one branch, with a set of customers, each of which own a car. Each has a number of recorded accidents associated with it.
(b) Define the following terms with example:
 - (i) Primary key
 - (ii) Meta data
 - (iii) Tuple
 - (iv) Super key
 - (v) Specialization
3. (a) What is normalization? Explain 1NF, 2NF, 3NF using given table.
Employee (Project No., Project Name, EmpID, Emp_Name, Rate, Category, Rate)
(b) Write short notes on:
 - (i) Index sequential file organization.
 - (ii) Generalization.
4. (a) Explain concurrent execution of transaction with example and also explain domain integrity.
(b) What is lock? Explain dead lock condition. Also explain two phase locking protocol.
5. Explain each of the following with example:
 - (i) Shadow paging
 - (ii) Tuple calculus
 - (iii) Authorization
 - (iv) Physical view of data
 - (v) Selection
6. (a) Write down the functions available in FoxPro that returns:



- (i) Empty character variable
 - (ii) Length of character expression
 - (iii) Repeat a character expression
 - (iv) Return database file name
 - (v) Print specify character
- (b) Write a program in FoxPro to generate the series as per the following:
0, 1, 1, 2, 3,
7. (a) Explain the following commands with example:
- (i) Searching commands
 - (ii) Adding commands
 - (iii) Input command
 - (iv) @ get command
- (b) WAP in FoxPro to check the given number is Prime or not.
8. (a) Explain the following functions with suitable examples:
- (i) Stuff()
 - (ii) Sign()
 - (iii) Chr()
 - (iv) NDX()
 - (v) Round()
- (b) Explain all debugging technique briefly.
9. (a) Explain the following set commands with example:
- (i) Set procedure to
 - (ii) Set decimal to
 - (iii) Set order to
 - (iv) Set color to
 - (v) Set talk off
- (b) WAP to sort the elements of an array.
10. Write short notes on the differentiation of the following with example:
- (i) Scatter and Gather
 - (ii) Memory variable and ordinary variable
 - (iii) Function and procedure
 - (iv) Looping and branching
 - (v) Input and accept.



B.Sc. I.T. (Part I) EXAMINATION, 2009
DATA STRUCTURE AND ALGORITHM

Time allowed: Three Hours

Maximum Marks: 50

Attempt any five questions.

1. (a) Explain primitive and composite data types. 5
(b) Give difference between queues and D-queue? 5
2. (a) Comment on the efficiency of linear search and binary search in relation to the number of elements in the list being searched. 5
(b) Suppose A, B, C are arrays of size m, n and m + n respectively. Array A is stored in ascending order and array B is in descending order. Give an algorithm to produce a third array C, containing all the data of array A and B in descending order. 5
3. (a) What do you understand by the following: 4
(i) Simple data structure
(ii) Compound data structure
(iii) Linear data structure
(iv) Non-linear data structure.
(b) Define the terms: 6
(i) Static data structure
(ii) Dynamic data structure
(iii) Null pointer.
4. (a) Write an algorithm to convert infix expression to postfix expression and postfix expression to infix expression. 5
(b) Write an algorithm to insert element into: 5
(i) Stack as an array
(ii) Linked stack.
5. (a) Change the following expression into prefix expression: 5
(i) $(A + B) * C + D/E - F$
(ii) $(X + Y)/(Z * Y) - R$
(iii) $(A + B \uparrow D)/(E - F) + G$
(iv) $A * (B + D)/E - F - (G + H)/K$



- (b) Write an algorithm to delete an element from circular linked list according to user choice. 5
6. (a) The following array of integers is to be arranged in ascending order using the bubble sort technique:
26, 21, 20, 23, 29, 17
Give the contents of the array at the end of each iteration. Write an algorithm. 6
- (b) In which two ways can the elements of a double dimensional array may be stored in computer's memory? 4
7. Write short notes on the following: 5x2=10
- (i) Kruskal's algorithm
 - (ii) Prim's algorithm
 - (iii) DFS
 - (iv) BFS
 - (v) Hashing techniques.
8. (a) What is sequential file organisation? 5
- (b) Explain the ISAM technique. 5
9. (a) Write an algorithm for insertion sort. 5
- (b) What is the difference between binary trees and B-tree? Give their algorithm with suitable example. 5



B.Sc. I.T. (Part I) EXAMINATION, 2009
FOUNDATION COURSE IN I.T.

Time allowed: Three Hours

Maximum Marks: 50

Attempt any five questions. All questions carry equal marks.

1. Write short notes on the following: 2x5=10
 - (i) Joy stick
 - (ii) MICR
 - (iii) Web camera
 - (iv) OCR
 - (v) Flatbed scanner

2. Differentiate the following: 2.5x4=10
 - (i) Impact and non impact printer
 - (ii) Line printer and page printer
 - (iii) Dot matrix printer and daisy wheel printer
 - (iv) Primary and secondary memory

3. Write short notes on the following: 2x5=10
 - (i) Auxiliary memory
 - (ii) Flash memory
 - (iii) Thermal transfer printer
 - (iv) Touch screen
 - (v) Scanner

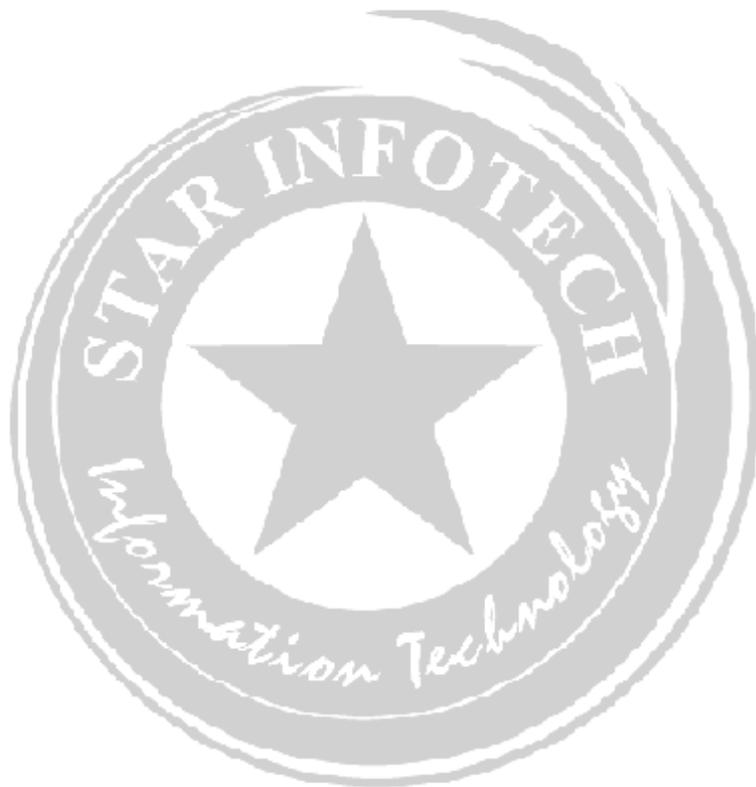
4. Convert the following: 2x5=10
 - (i) $(138.12)_{10} = (?)_2$
 - (ii) $(BCD)_{16} = (?)_2$
 - (iii) $(145)_8 = (?)_{10}$
 - (iv) $(11111)_2 = (?)_8$
 - (v) $(1010101)_2 = (?)_{16}$

5. (a) Illustrate application area of computer. 5
(b) What is computer virus? Define types of computer virus. 5

6. (a) Write a note on application protocol. 5



- (b) Explain web page and web site. 5
7. (a) What is Internet? Describe electronic mail. 5
(b) Explain K-map. 5
8. What is data warehouse? Describe method of storing data in data warehouse. 10





B.Sc. I.T. (Part I) EXAMINATION, 2009

OFFICE AUTOMATION PC SOFTWARE

Time allowed: Three Hours

Maximum Marks: 50

Attempt any five questions.

1. (a) What is GUI concept? What are the major software components on control panel? Explain in brief. 5
(b) What is the purpose of window explorer? Explain, how to open folders through explorer. 5
2. (a) How will you set up a page and create a memo? Explain. 6
(b) What are headers and footers? How are they used in MS-Word? 4
3. (a) What do you understand from mail merge? Write all the steps to perform mail merge. 6
(b) Explain the following in MS-Word: 4
 - (i) Mirror margin
 - (ii) Ruler bar
 - (iii) Word Wrap
 - (iv) Status bar
4. (a) What are the chart and graph? Write the steps for creating chart and graph in MS-Excel. 5
(b) Explain goal seek and scenario with example. 5
5. Explain the following:
 - (i) Pleading
 - (ii) Footnotes
 - (iii) Cross reference
 - (iv) Legends
 - (v) Creation of macro to display message. 10
6. (a) What are cell, cell pointer and range of cells? 5
(b) What is cell referencing? 5
7. (a) How will you set up a self running presentation in PowerPoint presentation? 4



- (b) What are the advantages to give an electronic presentation? How will you create a hid slide in powerpoint presentation? Explain in brief. 6
8. Explain the following in MS-Powerpoint: 10
- (i) Slide transition
 - (ii) OLE
 - (iii) Custom animation
 - (iv) Slide sorter
 - (v) Organisation chart
9. (a) Write steps to join two or more tables. 5
- (b) Write the procedure of sorting and searching of records. 5
10. Write short notes on the following features of MS-Access: 10
- (i) Importing and exporting data
 - (ii) Reports and queries
 - (iii) Data forms
 - (iv) Primary key
 - (v) Filters and auto filters.

