

3. (a) Distinguish between structure and union.  
(b) Explain the various file functions and its uses. (10 + 10)
4. (a) What is stack? What are the operations on a stack?  
(b) Write a C program to demonstrate push( ) and pop( ) operations on stack. (8 + 12)
5. (a) Write a C program for binary search.  
(b) Write a C program for exchange sort. (10 + 10)
6. (a) Explain 'while' and 'do-while' loops.  
(b) Write a C program to find biggest of three numbers. (12 + 8)
7. (a) Write a C program to find the given string as 'palindrome' or not.  
(b) Write a C program using function to calculate the value nCr. (10 + 10)
8. (a) What are preprocessor directives?  
(b) What is meant by command line arguments?  
(c) Write a C program for bubble sort. (5 + 5 + 10)

Reg. No. : .....

D 1033 Q.P. Code : [07 DSC 02/07 DIT 03]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2013.

First Year

Part III — Computer Science/Information Technology

DATA STRUCTURES AND C PROGRAMMING

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

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

1. (a) Describe the different program development methodologies.  
(b) Explain the structure of 'C' program.  
(c) What is meant by "Type conversion"? (6 + 6 + 8)
2. (a) Write the various string functions with examples.  
(b) Describe the function and types of functions. (10 + 10)

5. (a) Construct a truth table for  $(P \leftrightarrow Q) \leftrightarrow (R \leftrightarrow S)$ . (10)

(b) Determine the validity of the following argument if 7 is a prime number, then 7 does not divide 35. 7 divides 35. 7 is out of prime number.

6. (a) Let  $R$  denote a relation on the set of all ordered pair of positive integers by  $(x,y)R(u,v)$  if and only if  $nv = yu$  show that  $R$  is an equivalence relation. (10)

(b) Let  $A = \{a,b\}$ , let  $R = \{(a,b),(b,a),(b,b)\}$  and  $S = \{(a,a),(b,a),(b,b)\}$  be relations on  $A$ . Find  $SOR$  and  $ROS$ . (10)

7. (a) Explain the types of function with an example. (10)

(b) Let  $X = \{1,2,3,4\}$  and a mapping (functions)  $f: X \rightarrow Y$  be given by  $f = \{(1,2), (1,2), (2,3), (3,4), (4,1)\}$  form the composite functions  $f^2, f^3, f^4$ . (10)

2

Reg. No. : .....

D 1034 Q.P. Code : [07 DSC 03/07 DIT 01]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2013.

First Year

Part III — Computer Science /Information Technology

Allied – MATHEMATICAL FOUNDATIONS FOR  
COMPUTER SCIENCE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

(5 × 20 = 100)

1. (a) Find the inverse of the matrix  $\begin{bmatrix} 3 & 3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$ .

(b) Find the rank  $r(A)$  the matrix

$$A = \begin{bmatrix} 1 & 1 & 1 & 6 \\ 1 & 2 & 3 & 14 \\ 1 & 4 & 7 & 30 \end{bmatrix}$$



3. Simplify using Karnaugh map and implement by using NOR gates only

$$Q(A, B, C, D) = \sum m(1, 5, 6, 8, 11, 12, 13).$$

4. Discuss the internal architecture of 8085 with a neat block diagram.
5. (a) Explain the addressing modes of 8085 with examples. (10)  
(b) What is meant by memory mapped I/O? Explain. (10)
6. Discuss the working of a DMA controller with a block diagram.
7. (a) Discuss the working of associative memory with diagram and match logic. (12)  
(b) Explain any one page replacement algorithm. (8)
8. Discuss :
- (a) CPU-IOP communication
  - (b) Ripple counters
  - (c) Gray code.

Reg. No. : .....

D 1023

Q.P. Code : [07 DSC 01/  
07 DSCA 02/07 DIT 02]

(For the candidates admitted from 2007 onwards)

B.Sc./B.C.A. DEGREE EXAMINATION, MAY 2013.

First Year

Part III — Computer Science/Computer Application/  
Information Technology

DIGITAL FUNDAMENTALS AND ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

1. (a) Draw the circuit of a full adder and give its truth table. (10)  
(b) What are universal gates? Why are they called so? Justify. (10)
2. (a) Convert the following :  
(i)  $100_{10}$  in to binary  
(ii)  $123.12_{11}$  in to octal  
(iii)  $11011.11_2$  in to decimal. (3 + 3 + 4)  
(b) Draw the circuit of a JK flip flop and explain its working. (10)