

4. (a) Explain the features of structures.  
(b) Explain the various file operations. (10+10)
  5. (a) Write a program in print a single digit number into words.  
(b) Write a note on 'preprocessor directives'.  
(10+10)
  6. What is queue? Explain various operations on queue. (20)
  7. Compare linear search and binary search. (20)
  8. Write the selection sort algorithm and explain it with an example. (20)
- 

Reg. No. : .....

**D 2032 Q.P. Code : [07 DSC 02/07 DIT 03]**

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2013.

First Year

Part III — Computer Science/Information Technology

DATA STRUCTURES AND C PROGRAMMING -

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Explain problem solving techniques.  
(b) Explain the various I/O functions. (10+10)
2. (a) Discuss the different decision statements.  
(b) Write a program to check the given number is 'odd' or 'even'. (12+8)
3. (a) Explain various string functions.  
(b) Write a program to count number of characters, linear and words in a text. (10+10)

5. (a) Determine which of the following compound proposition are tautology and which of them one contradictions using truth talks.
- (i)  $\neg q \wedge (p \rightarrow q) \rightarrow \neg p$
- (ii)  $\neg[(q \rightarrow r) \wedge r \wedge (p \rightarrow q)]$ .
- (b) Describe the concept of predicate calculus with an example. (7 + 7 + 6)
6. (a) Explain the types of functions.
- (b) If  $R$  is the relation on the set of positive integers such that  $(a, b) \in R$  if and only if  $ab$  is a perfect square. Show that  $R$  is an equivalence relation. (10 + 10)
7. (a) What is a groups? Explain different types of groups.
- (b) Explain the various representation of groups. (10 + 10)
8. (a) Explain tree and binary tree along with its properties.
- (b) Discuss the binary tree traversal methods with examples. (10 + 10)

Reg. No. : .....

D 2161

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

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 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.

(5 × 20 = 100)

1. (a) Find the rank of the following matrix.

$$\begin{pmatrix} 3 & 2 & 1 & 4 \\ 7 & 5 & 9 & 3 \\ 1 & 3 & -2 & 6 \\ 6 & -4 & -1 & 3 \end{pmatrix}$$

- (b) Find the inverse of the following matrix.

$$\begin{pmatrix} 1 & 2 & -1 \\ 3 & -4 & 2 \\ -1 & 3 & -1 \end{pmatrix}$$

(10 + 10)

3. Simplify by using Karnaugh map and implement using AND-OR logic.
- $$Q(A,B,C,D) = \sum m(0,2,3,5,8,11) + \sum d(4,6,13,15)$$
4. Discuss any ten instructions of 8085 with suitable examples.
5. (a) Explain the register structure of 8085. (10)  
 (b) What is multiplexing with respect to 8085? Explain. (10)
6. How priority is assigned to interrupts using parallel priority interrupt method? Explain.
7. (a) Explain the virtual memory concept. (10)  
 (b) What is a cache memory? Explain its use. (10)
8. Discuss:
- Handshaking
  - $4 \times 1$  multiplexer
  - Half adder
  - Interrupts.

Reg. No. : .....

D 2015

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,  
DECEMBER 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.

- (a) Subtract 22 from 55 by using 2's complement method. (8)  
 (b) Draw the circuit of a BCD adder and explain its working. (12)
- (a) Draw the current of a  $2 \times 4$  decoder and give the truth table.  
 (b) Implement using fundamental gates.

$$Q = A\bar{B}\bar{C} + A\bar{B}C + \bar{A}BC.$$