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.
   \( (20) \)

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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.

\( (5 \times 20 = 100) \)

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 tables.

(i) \( \neg q \land (p \rightarrow q) \rightarrow \neg p \)

(ii) \( \neg (q \rightarrow r) \land r \land (p \rightarrow q) \).

(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 group? 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)

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)
(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Second Year

Part III — Information Technology

OBJECT ORIENTED PROGRAMMING WITH C++

Time: Three hours Maximum: 100 marks

Answer any FIVE questions.

All questions carry equal marks.

\[(5 \times 20 = 100)\]

1. Explain the key concepts in object oriented programming.

2. (a) Explain the benefits of object oriented programming. 

(b) Explain the ways of creating symbolic constants in C++.

3. Elaborate on the various aspects of member functions in C++. 
4. Explain overloading of unary and binary operators by giving a C++ program for each.

5. Explain in detail type conversion in C++ by giving examples.

6. Explain multilevel and multiple inheritance by giving example C++ program.

7. Explain the use of pointers and its types in C++ by giving examples.

8. (a) Explain the use of class and function templates with examples. (12) 
(b) Explain exception handling in C++ with an example. (8)
(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Second Year

Part III — Information Technology

SYSTEM SOFTWARE AND OPERATING SYSTEM

Time: Three hours  Maximum: 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. Explain a simple SIC assembler with object code.

2. Explain the loader design options.

3. (a) Explain the basic macroprocessor functions.
     (b) Discuss on user interface.  \(10 + 10\)

4. Explain the design of a two-pass assembler.

5. Describe the interrupt processing and interrupt classes.

6. Explain variable partition multiprogramming.
7. What is job scheduling? Explain the different methods of job scheduling. (4 +16)

8. Write short notes on:
   (a) File descriptor.
   (b) Access control matrix. (10 + 10)
Reg. No. : ................................

D 1587 .................................. Q.P. Code : [07 DIT 06]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Second Year

Part III — Information Technology

SOFTWARE ENGINEERING

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

\[(5 \times 20 = 100)\]

1. Elucidate on the various quality and productivity factors.

2. (a) Explain the various project size categories. (12)
   (b) Explain the aspects to be considered in defining a problem. (8)

3. Elaborate on the various software cost functions.

4. Explain the various relational notation with examples.
5. Discuss on the various aspects in structured coding technique.

6. Explain walk throughs and inspection with examples.

7. Explain the aspects in system testing with examples.

8. Elaborate on web application development engineering.
D 1588

Q.P. Code: [07 DIT 07]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Second Year

Part III — Information Technology

INTERNET AND JAVA PROGRAMMING

Time: Three hours Maximum: 100 marks

Answer any FIVE questions.

All questions carry equal marks.

(5 x 20 = 100)

1. Explain the basic concepts of HTML in detail. (20)

2. Explain with examples, the various control structures and looping structures in Java. (20)

3. (a) Discuss in detail, the various types of operators in Java. (10)

   (b) Describe the complete life cycle of a thread with state transition diagram of a thread. (10)
4. Explain the string handling features of Java in detail. (20)

5. Explain in detail, different types of inheritance with suitable examples. (20)

6. (a) Write an applet to receive the value of the parameter message from the HTML file and display it on the webpage. (10)

(b) Write an applet to create a frame and place a dialog box in it. Dialog box should display a message in it. (10)

7. Explain in detail, the exception handling mechanism in Java. (20)

8. (a) What do you mean by check box control? How it differs from radio button control. (10)

(b) Write applets to draw the following shapes:
   (i) Square inside a circle and. (5)
   (ii) Circle inside a square. (5)
PRINCIPLES OF DATA COMMUNICATIONS AND NETWORKS

Time: Three hours
Maximum: 100 marks

Answer any FIVE questions.

1. Explain the concepts of data communication in detail.

2. Explain the two types of multiplexing methods.

3. Explain the principles of packet switching and routing in packet switching.

4. Explain about functions of seven layers in DSI reference model.
5. Explain the following:
   (a) ISDN
   (b) X.25 protocol.

6. Explain about ARP and RARP in detail.

7. Discuss in detail on asynchronous transfer mode.

8. Explain in detail about web browser architecture.
(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Third Year

Part III — Information technology

RELATIONAL DATA BASE MANAGEMENT SYSTEM AND ORACLE

Time: Three hours

Maximum: 100 marks

Answer any FIVE questions.

All questions carry equal marks.

\[(5 \times 20 = 100)\]

1. What is meant by Integrity Constraints? What is the need for it? How are they implemented? Explain with examples.

2. Explain the database design with suitable examples.

3. (a) Draw a Schema for a library information system, indicating the primary key, foreign keys/cross references and non-key attributes

(b) Explain the commands used for transaction processing.
6. Explain the control structures in PL/SQL with examples.

7. What is a view? Explain its use with examples.

(a) Explain the term: data dictionary.

(b) Explain it with examples. How will you use it?

(i) What is a function? How will you create it?

(ii) set operations

(iii) nested queries

5. (a) Explain:

(i) Project (proj-no, supp-no, part-no, qty)

(ii) List the suppliers who supply any one

with numbers 101 or 102

with numbers 101 and 102

List the suppliers who supply the parts

List the suppliers who supply the parts

Consider the following tables and answer the

examples.

(a) Explain any five SQL plus commands with

4.
8. Discuss the following:
   (a) Relation
   (b) Tuple
   (c) Candidate key
   (d) Domain
   (e) Truncate
D 1590

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Third Year

Part III — Information Technology — Main

VISUAL PROGRAMMING

Time : Three hours   Maximum : 75 marks

Answer any FIVE questions.

All questions carry equal marks.

\[(5 \times 20 = 100)\]

1. Discuss the significances of Event Driven Programming.

2. Explain the following:
   (a) Project explorer window
   (b) Tool box

3. List and explain the various data types used in VB environment.

4. Explain the various Grid controls in Visual Basic.
5. Explain the following:
   (a) Parts of menu editor
   (b) Assigning a shortcut key to menu item

6. (a) Discuss the properties of Image control.
   (b) Explain the concept of arrays with an example.

7. Explain the following:
   (a) Deleting menu items
   (b) Defining access character.

8. Elaborate on the process of building ActiveX controls in VB with an example code.
(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, MAY 2014.

Third Year

Part III — Information Technology

WEB TECHNOLOGY

Time: Three hours 
Maximum: 100 marks

Answer any FIVE questions.

All questions carry equal marks.

\[(5 \times 20 = 100)\]

1. (a) Explain the functions of various layers of the OSI model.
    (b) Describe the types of bridges. \((14 + 6)\)

2. (a) Elaborate on the functions of TCP/IP.
    (b) Distinguish between UDP and TCP. \((14 + 6)\)

3. (a) Explain any ten HTML Tags and its uses.
    (b) Describe the concept of ‘Browsers’. \((15 + 5)\)
4. (a) Discuss the features of e-mail.  
(b) Write a note on e-mail related protocols and e-mail privacy.  
(12 + 8)

5. (a) Explain the concept of static, dynamic and active web pages.  
(b) Compare Microsoft and java technologies.  
(6 + 14)

6. Write a note on the following:  
(a) Java servlets  
(b) Java applets.  
(10 + 10)

7. (a) Describe the feature of XML.  
(b) What is meant by CGI?  
(14 + 6)

8. Write a note on the following:  
(a) ASP  
(b) ActiveX controls.  
(10 + 10)