

Reg. No. :

D 38

**Q.P. Code : [07 DSCA 02/
07 DSC 0/07 DIT 02]**

(For the candidates admitted from 2007 onwards)

B.C.A./B.Sc. DEGREE EXAMINATION,
DECEMBER 2010.

First Year

Part III — Computer Application/Computer Science
Information Technology

DIGITAL FUNDAMENTALS AND ARCHITECTURE

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Perform the binary addition, multiplication and division : (10)
- (i) $58.75 + 23.5$
- (ii) 58.75×23.5
- (iii) $58.75 \div 23.5$
- (b) Explain about BCD adder with neat diagram. (10)

2. (a) Write about a parallel binary subtractor (9)
- (b) Prove Demorgan's theorem (5)
- (c) Implement the following Boolean Expression using NOR gates only. $Y = AB + BC + \overline{AC}$ (6)
3. (a) Using Karnaugh map simplify the following $f(w, x, y, z) = (0, 2, 4, 8, 9, 10, 11, 12, 13)$. (10)
- (b) Write about decoders. (10)
4. (a) With neat diagram write about RS flip-flop. (10)
- (b) Explain about Multiplexers. (10)
5. (a) Draw and explain the pin out diagram of 8085. (10)
- (b) Write about addressing modes of 8085. (10)
6. (a) Write about asynchronous data transfer :
- (i) Strobe control (7)
- (ii) Handshaking. (7)
- (b) Explain about DMA transfer. (6)
7. Illustrate the virtual memory concept. (20)
8. Write a note on Associative Memory. (20)

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D 38

**Q.P. Code : [07 DSCA 02/
07 DSC 0/07 DIT 02]**

(For the candidates admitted from 2007 onwards)

B.C.A./B.Sc. DEGREE EXAMINATION,
DECEMBER 2010.

First Year

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Information Technology

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8. Write a note on Associative Memory. (20)

S.C

Reg. No. :

D 78

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

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

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. Discuss about formatted and unformatted I/O functions.
2. Explain different types of operators and string functions.
3. Write about preprocessor directive.
4. Discuss in detail about singly linked list.

5. Write short note on :

- (a) Enumerated data type
- (b) Queue.

6. Explain the concept of structure and compare with UNION.

7. How can you sort a set of n numbers using quick sort and find a number from the sorted numbers using binary search?

8. Write a program to display first twenty odd numbers, first ten even numbers and sum of first 30 numbers.

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D 79 Q.P. Code : [07 DSC 03/07 DIT 01]

(For the candidates admitted from 2007 onwards)
B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

First Year

Part III — Computer Science / Information Technology
Allied — MATHEMATICAL FOUNDATIONS FOR
COMPUTER SCIENCE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

1. Find the eigen values and eigen vectors of the matrix $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$. (20)
2. (a) Write the principle of duality. (2)
(b) Prove the following identities :
 - (i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
 - (ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.
- (c) Write the dual of the above identities and also prove them. (8)

3. (a) If $A = \{a, b\}$, $B = \{1, 2\}$ and $C = \{2, 3\}$, find
- $A \times (B \cup C)$
 - $A \times (B \cap C)$
 - $(A \times B) \cup (A \times C)$
 - $(A \times B) \cap (A \times C)$, $(V) (A \times B) \cup C$. (10)
- (b) Show that for any two Sets A and B
- $A - B = A \cap \sim B$
 - $A \subseteq B \Leftrightarrow \sim B \subseteq \sim A$
 - $A - (A \cap B) = A - B$. (10)

4. Show that :

- $\neg(P \leftrightarrow Q) \Leftrightarrow (P \vee Q) \wedge \neg(P \wedge Q)$
- $\neg(P \leftrightarrow Q) \Leftrightarrow (P \wedge \neg Q) \vee (\neg P \wedge Q)$
- $\neg(P \wedge Q) \Leftrightarrow (\neg P \vee \neg Q) \Rightarrow (\neg P \vee Q)$
- $(P \rightarrow Q) \wedge (R \rightarrow Q) \Leftrightarrow (P \vee R) \rightarrow Q$. (20)

5. Write in the symbolic form and negate the following statements.

- Everyone who is healthy can do all kinds of work (8)
- Some people are not admired by everyone. (7)
- Everyone should help his neighbors or his neighbors will not help him. (5)

6. (a) If $f: A \rightarrow B$, $g: B \rightarrow C$ be two functions which are one-to-one and onto prove that $g \circ f$ is also one-to-one and onto. (10)

- (b) Let $f: R \rightarrow R$, $g: R \rightarrow R$ where R is the set of real numbers given by $f(x) = x^2 - 4$ and $g(x) = x + 4$. Find $f \circ g$ and $g \circ f$. State whether these functions are injective, surjective and bijective. (3 + 3 + 4)

7. (a) Let R and S be two relations from A to B. Define (i) the complement of R (ii) the intersection of R and S. (4)

- (b) Let $R: A \rightarrow B$, $S: B \rightarrow C$ be two relations prove that $(S \circ R)^{-1} = R^{-1} \circ S^{-1}$. (6)

(c) Define :

(i) an equivalence relation and

(ii) a partial order relation. (4)

- (d) Prove that the relation R defined on the set of all ordered pairs of positive integers by $(x, y)R(u, v)$ iff $xv = yu$ is an equivalence relation. (6)

8. (a) Write the definitions of
- (i) graph
 - (ii) digraph
 - (iii) isomorphic graphs with examples
 - (iv) complete graph. (2 + 2+ 4+ 2)
- (b) Define a binary tree. (2)
- (c) Write the algorithms of traversing a binary tree. (8)
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Q.P. Code : [07 DIT 04]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

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 × 20 = 100)

1. (a) Explain the various operators available in C++.
- (b) Explain the concept of function overloading. (12 + 8)
2. (a) Describe the format and its functionality with an example about looping statements in C++.
- (b) Write a C++ program to find the sum of individual digits of five digit number. (12 + 8)

3. (a) Explain the characteristics of constructor and destructor.
- (b) Write a program to demonstrate the use of dynamic constructor. (12 + 8)
4. (a) Discuss the different types of inheritance.
- (b) Write a note on 'type conversions'. (14 + 6)
5. (a) Explain the concept of polymorphism.
- (b) Write a note on 'this' pointer. (14 + 6)
6. (a) Write a program to copy the content of one file to another file.
- (b) Write a note on the various file mode parameters. (12 + 8)
7. Write a program on matrix operations using function overloading showing all matrix operations. (20)
8. Write a note on the following : (5 + 5 + 10)
 - (a) Inline functions
 - (b) Friend functions
 - (c) Virtual functions.

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Q.P. Code : [07 DIT 05]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

Second Year

Part III — Information Technology

SYSTEM SOFTWARE AND OPERATING SYSTEM

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. What is an assembler? Explain the basic assembler statements with an example.
2. What is a loader? Explain the basic loader function?
3. What is a macroprocessor? Explain the general purpose macro processor.
4. Discuss :
 - (a) Code optimization of a program statement
 - (b) Compiler compilers.

5. Define DOS. Explain the history of DOS also explain any five commands.
6. What is scheduling? Explain any two scheduling techniques.
7. What is paging? Explain the paging hardware mechanism in virtual memory.
8. Write short notes on :
 - (a) free space management
 - (b) access control matrix.

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D 147

Q.P. Code : [07 DIT 06]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

Second Year

Part III — Information Technology

SOFTWARE ENGINEERING

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. Explain software project size factors. (20)
2. (a) Discuss on phased life cycle model. (8)
(b) Write about software product complexity. (12)
3. Describe the formal specification technique, "Relational Notations" in detail. (20)
4. (a) Explain the concept of Petrinets. (10)
(b) With suitable illustration, explain the strategy, "Efficiency considerations". (10)
5. Write the guidelines that are to be followed to have a good coding style. (20)

6. (a) Explain the documentation guidelines in detail. (12)
(b) Write note on walkthroughs and inspections. (8)
7. Compare and contrast functional testing with system testing. (20)
8. Explain the following concepts :
(a) Component-based software engineering. (10)
(b) Software verification for quality assurance. (10)

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Q.P. Code : [07 DIT 07]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

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 × 20 = 100)

1. (a) What is URL? Explain the components. (6)
- (b) Discuss the structure of a HTML document. (6)
- (c) Explain : (i) TELNET (ii) Browser. (8)
2. (a) Explain the data types in Java. (5)
- (b) Discuss the looping structures in Java with examples. (10)
- (c) Explain the use of break. (5)

3. (a) What is an interface? Explain its use. (10)
(b) Explain the use of 'Static' keyword in Java. (10)
4. (a) Bring out the differences between 'throw' and 'throws'. (8)
(b) Explain the purpose of the following methods.
(i) Join ()
(ii) Sleep ()
(iii) Suspend (). (12)
5. (a) Discuss the applet life cycle. (8)
(b) Discuss the graphics primitives with examples. (12)
6. (a) Discuss the exception handling mechanism. (12)
(b) What are wrapper classes? Explain. (8)
7. (a) Write a Java program to create a class for representing a 'fan' and also write the main function to create an object and to store information about the fan in the Hall in which you are writing the examination. (14)
(b) What is the effect of 'Final' class? (6)

8. Discuss :

- (a) Advantages of Java
(b) User-defined exceptions.
(c) Thread priority.

(8 + 6 + 6)

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Q.P. Code : [07 DIT 08]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

Third Year

Part III — Information Technology

PRINCIPLES OF DATA COMMUNICATIONS AND NETWORKS

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

(5 × 20 = 100)

1. Explain with examples, the various techniques used for transmission error detection and correction.
2. Explain the various guided media used for data transmission.
3. Explain the various types of Network topologies and switching methodologies.
4. Explain the functions of layers in OSI reference model.

5. Discuss in detail on ISDN.
6. Explain the various internetworking devices and their functions.
7. Discuss in detail on domain name system.
8. Explain in detail on Electronic Mail.

Reg. No. :

D 150

Q.P. Code : [07 DIT 09]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

Third Year

Part III — Information Technology

RELATIONAL DATABASE MANAGEMENT SYSTEM
AND ORACLE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. Design a suitable structure for the following data by using the normalization procedure.
Customer name, address, bank name, cust-id, branch name, A/c no, balance, transaction type, transaction date, transaction amount, branch-code.
2. Discuss the create table command with all features. How constraints are specified? What are their effects? Explain with examples.

3. Explain the following with examples :
 - (a) Union compatible operators
 - (b) Nested query
 - (c) Aggregate functions.
4. (a) Explain the transaction control commands with example. (8)
(b) Create a cursor to read the records from the employee table and to display them one by one. Assume the attributes.
5. What is a procedure? What is a function? Bring out the differences. Explain with examples.
6. (a) Discuss the components of a database system. (10)
(b) Discuss the SQL * Plus commands with examples.
7. (a) What is denormalization? Explain. (10)
(b) Explain the data types of oracle. (10)
8. Discuss :
 - (a) Database administrator
 - (b) Oracle architecture
 - (c) Control structures of PL/SQL.

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Q.P. Code : [07 DIT 10]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

~~Sixth Semester~~

Third year

Part III — Information Technology

VISUAL PROGRAMMING

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Explain the elements of the form and its properties. (14)
- (b) Write a Visual basic program to read any two number and add it, (6)
2. (a) Explain the usage of the file and edit menu. (10)
- (b) Write a Visual basic program to read any five numbers and display them in ascending order. (10)

3. (a) Explain the data types in Visual Basic. (12)
(b) Explain the input and message box. (8)
4. (a) Explain any three built-in functions with examples. (9)
(b) Explain the subroutines and functions with an example. (11)
5. (a) Explain the List and Combo Boxes controls with an example. (15)
(b) What is a Grid? Explain its properties. (5)
6. (a) How to creating button using picture box? Explain. (6)
(b) Write a visual basic program to create a calculator using control array. (14)
7. (a) Explain the following control
(i) Option buttons
(ii) Check box
(iii) Text box
(iv) Label (10)
(b) Explain the MDI forms. (10)

8. (a) Explain the data base development with DAO. (15)
(b) What are Record sets? Explain the types of Record sets. (5)

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Q.P. Code : [07 DIT 11]

(For the candidates admitted from 2007 onwards)

B.Sc. DEGREE EXAMINATION, DECEMBER 2010.

Third Year

Part III — Information Technology

WEB TECHNOLOGY

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

(5 × 20 = 100)

1. Explain the layered architecture of OSI model.
2. Discuss the various issues with regard to internetworking.
3. Explain the concepts of IP address and IP datagram.
4. Describe the concept of UDP.
5. Explain the working of E-mail sending protocols.

6. Discuss any ten HTML tags with examples.
7. Explain and compare the characteristics of various tier-based Internet architectures.
8. Discuss the significance of XML.