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 ÷ 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)

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 ÷ 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)

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   (b) Write about addressing modes of 8085. (10)

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   (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)

Reg. No. : .....

D 37 Q.P. Code : [07 DSCA 01]

(For the candidates admitted from 2007 onwards)

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

First Year

Computer Applications

COBOL PROGRAMMING

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Explain the Identification and Environment Division in detail. (10)

   (b) What is Literals? List the types of Literals. (4)

   (c) Explain the non-editing picture character in COBOL. (6)

2. (a) Explain the Add statement and Divide statement in COBOL. (14)

   (b) Explain the GOTO statement with an example. (6)

3. (a) A company has four categories of employees. Category 1 employee get 30% of salary as bonus. Category 2 get 20% as bonus. Category 3 get 15% and Category 4 get 50% as bonus. Given as employee number, name, department, Category Code and Salary. Write COBOL program using GOTO...Depending On statement to write an employee record including bonus to be given. (12)

(b) To find the content of receiving field. (4)

	Sending field	Receiving field	
	Contents	Picture	Contents
(i)	12n34	Z, ZZ – 99	?
(ii)	0123	Z999	?
(iii)	1234	99B99	?
(iv)	3	$Z,ZZCR	?

(c) Explain the Data Movement Verb and Compute Statement in COBOL. (4)

4. (a) Explain the various kinds of IF statement in COBOL. (8)

(b) Explain any four format of Perform statement. (12)

5. (a) Explain the level number '66' with an example. (10)

(b) Write a COBOL program which accepts 20 values for the variable Number and calculate its sum using Perform statement. (10)

6. (a) Explain the format of the Environment and DATD division in sequential file. (10)

(b) Explain the Sort Verb with an example. (10)

7. (a) Explain the two dimensional table in COBOL with an example. (10)

(b) Explain the Set and Search verb with an example. (10)

8. An input file consists of the details : Employee name, number, basic pay, earnings and deductions. Write a COBOL program to calculate the gross pay (basic pay + earnings) and net pay (gross pay – deduction). (20)

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D 39 **Q.P. Code : [07 DSCA 03]**

(For the candidates admitted from 2007 onwards)

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

First Year

Part III — Computer Applications

Allied — COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Find all positive roots of $x^3 - 4x + 1 = 0$ using Newton – Raphson method.

   (b) Solve the following using Gauss-Elimination method.

   $2x_1 + x_2 + x_3 = 7$

   $4x_1 + 2x_2 + 3x_3 = 4$

   $x_1 - x_2 + x_3 = 0$. (12 + 8)

2. (a) From the table of values given below compute $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $x = 1$.

x:	1	2	3	4	5	6
y:	1	8	27	64	125	216

(b) Find the value of $\int_0^1 \frac{dx}{1+x^2}$ taking 5 subintervals by Trapezoidal rule with $h = 0.2$. (10 + 10)

3. (a) Use suitable formula to find the values of $f(82)$ and $f(91)$ from the following data

x:	80	85	90	95	100
$f(x)$:	5026	5674	6362	7088	7854

(b) Solve the equation $\frac{dy}{dx} = 1 - y$ with $x = 0$, $y = 0$ using Euler's method and tabulate the solutions at $x = 0.1$, 0.2 and 0.3. (12 + 8)

4. Use Runge-Kutta fourth order method to find the values of $y(0.1)$ and $y(0.2)$, given that $\frac{dy}{dx} = x + y^2$, $y(0) = 1$ and $h = 0.1$. (20)

5. (a) Determine the polynomial, using Lagrange's method, given that $f(0) = 1$, $f(1) = 3$ and $f(3) = 55$ and hence find $f(2)$.

(b) Calculate the median from the following data. (10 + 10)

x:	10-25	25-40	40-55	55-70	70-85	85-100
f:	6	20	44	26	3	1

6. (a) If in a moderately asymmetrical distribution the values of median and mean are 72 and 78 respectively. Estimate the value of mode.

(b) Calculate the mean and standard deviation from the following data. (6 + 14)

x:	20-25	25-30	30-35	35-40	40-45	45-50	50-55
f:	170	110	80	45	40	30	25

7. (a) Find out the correlation coefficient to the following data

x:	65	66	67	67	68	69	71	73
y:	67	68	64	68	72	70	69	70

(b) Calculate the rank correlation coefficient from the following after assigning ranks to them. (10 + 10)

x:	73.2	85.8	78.9	75.8	77.2	81.2	83.8
y:	97.8	99.2	98.8	98.3	98.3	96.7	97.1

8. (a) Determine the two regression equations of x on y and y on x from the following

x :	10	12	13	12	16	15
y :	40	38	43	45	37	43

(b) State the properties of Regression coefficients. (14 + 6)

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D 42 **Q.P. Code : [07 DSCA 06/ 07 DSC 06]**

(For the candidates admitted from 2007 onwards)

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

Second Year

Part III — Computer Application/Computer Science

SOFTWARE ENGINEERING

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. What are the various steps involved in software engineering? Elaborate the steps.

2. Discuss the concept of staffing – level estimation.

3. Explain the modules and modularization criteria in software design in detail.

4. Describe the different coding styles.

5. Discuss in detail about :

   (a) Walkthroughs and Inspections

   (b) Quality Assmance

   (c) System Testing

   (d) Unit Testing and Debugging.

6. Explain in detail about configuration management.

7. Narrate the Algorithmic cost models.

8. Explain any two Design Techniques followed in software design.

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Reg. No. : .....

D 40 Q.P. Code : [07 DSCA 04]

(For the candidates admitted from 2007 onwards)

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

Second Year

Part III — Computer Applications

PROGRAMMING WITH C AND C++

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Explain the data types in C.

   (b) Discuss the evaluation of expressions with examples.

   (c) Explain the 'for' and 'while' looping structures with examples. (5 + 7 + 8)

2. Write a function to receive a matrix and to print the elements, if any, which are column minimum and row maximum. Also write the main function to read the matrix and to pass it to a function.

3. (a) Bring out the differences between a 'structure' and a 'union'.

(b) Write a C program to read an array of numbers and to print the even numbers only by using pointers. (10 + 10)

4. Explain the following with respect to C++ :

(a) Friend function

(b) Inline function

(c) Copy constructor. (8 + 6 + 6)

5. (a) Discuss the overloading of many operator with example.

(b) What is meant by polymorphism? Explain it with an example. (8 + 12)

6. Write a C++ program to create a class for representing a "tube light" with suitable properties and methods. Also write the main function to create an object and to store the information about a tube light in the examination hall.

7. (a) What is a template? Explain.

(b) Discuss the stream classes in C++. (10 + 10)

8. (a) Explain the 'new' and 'delete' operators in C++.

(b) Discuss the hierarchical inheritance with suitable example. (8 + 12)

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D 41 **Q.P. Code : [07 DSCA 05]**

(For the candidates admitted from 2007 onwards)

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

Second Year

Part III — Computer Applications

DATA STRUCTURES AND ALGORITHMS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Explain the phases of creating Programs.

   (b) Describe the following :

   (i) Algorithm

   (ii) Data structure

   (iii) SPARKS. (14 + 6)

2. Explain the evaluation of Postfix expression with an example and describe the use of stack.

3. Explain the representation of singly linked list and doubly linked list with examples.

4. Write a note on the following : (5 + 5 + 5 + 5)

   (a) Storage pool

   (b) Spanse matrices

   (c) Dynamic storage management and

   (d) Garbage collection and compaction.

5. (a) Write the algorithm for Fibonacci search.

   (b) Write the algorithm for insertion sort. (10 + 10)

6. Discuss the methods of external sorting.

7. Explain the various Hashing functions.

8. Elaborate the various index techniques.

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Reg. No. : .....

D 43 Q.P. Code : [07 DSCA 07]

(For the candidates admitted from 2007 onwards)

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

Second Year

Part III — Computer Applications

OPERATING SYSTEMS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

(5 × 20 = 100)

1. Explain the objectives and functions of an operating system.

2. Explain the evolution of operating systems.

3. Explain the different categories of services provided by an operating system.

4. Explain the various methods for allocating disk space to files.

5. (a) Explain the various states of a process. (6)

(b) Explain the concept of context switching. (8)

(c) Explain process state transitions. (6)

6. Explain in detail fixed partitioned memory management schemes.

7. Explain any five page replacement algorithms.

8. Explain the use of Remote Procedure calls.

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Reg. No. : .....

D 45 **Q.P. Code : [07 DSCA 09]**

(For the candidates admitted from 2007 onwards)

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

Third Year

Part III — Computer Applications

JAVA PROGRAMMING

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) How the structure of C and C++ differ? (5)

   (b) Explain the advantages of Java. (15)

2. (a) Explain the operations of Java with examples. (10)

   (b) Write a java program to create a class for refreshing a city with attributes and methods. Also write the main function. (10)

3. Explain how multiple inheritance is implemented in java with an example. (20)

4. (a) Discuss the life cycle of an applet. (8)

   (b) Explain the exception handling feature of Java with example. (12)

5. Explain the following with examples : (20)

   (a) File Input Stream

   (b) Buffered Input Stream

   (c) Pushback Input Stream

   (d) Random Access.

6. (a) Explain the access modifiers with examples. (12)

   (b) What are called wrapper lanes? Why are they called so? Explain. (8)

7. (a) Bring out the difference between 'throw' and 'throws'. (5)

   (b) Explain the use of 'synchronized' keyword with example. (15)

8. Explain :

   (a) JVM (b) Continue statement

   (c) Lang Package (d) Final class.

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D 46 Q.P. Code : [07 DSCA 10]

(For the candidates admitted from 2007 onwards)

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

Third Year

Part III — Computer Applications

DATABASE CONCEPTS AND VISUAL PROGRAMMING

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. Describe the structure of relational data model with an example.

2. Explain the significance of first three normal forms with example.

3. Explain the syntax of various looping structure in Visual Basic.

4. Discuss the structure and usages of logical expressions in Visual Basic with examples.

5. Explain the significance of Timer control in visual basic application environment.

6. How to assign keyboard keys to access the menu items? Explain with example.

7. Explain the ways and means to create one–dimensional integer array and how an array is passed to procedures? Explain with example.

8. Describe the concept of sequential data files to Visual Basic.

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Reg. No. : .....

D 47 **Q.P. Code : [07 DSCA 11]**

(For the candidates admitted from 2007 onwards)

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

Third Year

Part III — Computer Applications

E – COMMERCE

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. Narrate the role of E–commerce drivers. Also write about E-commerce myths. (20)

2. Describe the procedure of integrating E–commerce. (20)

3. Give a detailed description on mobile commerce. Also explain how wireless technology is helpful in M–commerce. (20)

4. (a) Write about wireless application protocol.(10)

   (b) Discuss on B2B commerce. Also write its advantages. (10)

5. Summarize the B2B communication tool, "EDI" with its types and advantages. (20)

6. (a) Write about the designing procedure for providing security. (10)

   (b) Describe the client and server security threats in detail. (10)

7. Explain the security protection and recovery methodologies. (20)

8. (a) Narrate the requirements for Internet based payments. (10)

   (b) Elucidate the general guidelines to E–payment with E–payment types. (10)

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D 44

Q.P. Code : [07 DSCA 08/ 07 DSC 08]

(For the candidates admitted from 2007 onwards)

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

Third Year

Part III — Computer Applications/Computer Science

COMPUTER NETWORKS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

1. With a neat sketch, explain the functions of various layers in OSI reference model.

2. Explain the various guided transmission media.

3. Discuss in detail on,communication satellites.

4. Explain with examples; the error detection and correction codes.

5. Describe in detail on sliding window protocols.

6. Explain with examples, any three routing algorithms in computer networks.

7. Discuss in detail on Cryptography.

8. Explain in detail on Electronic Mail.

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