

Reg. No. : .....

D 3002

Q.P. Code : [07 DSCA 02]

(For the candidates admitted from 2007–2008 onwards)

B.C.A. DEGREE EXAMINATION, JUNE 2008.

First Year

Part III — Computer Applications

DIGITAL FUNDAMENTAL AND ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Convert the following :

(i)  $(63718)_{10}$  to binary and hexadecimal. (5)

(ii) Prove De Morgan's theorem. (5)

(b) Explain the working of BCD adder with a neat diagram. (10)

2. (a) Explain the following :
- (i) Full Adder. (6)
  - (ii) XOR Gate. (4)
- (b) Sketch the working of Shift Right register. (10)
3. (a) Simplify the Boolean function.
- $f(A, B, C, D) = \Sigma(0, 2, 3, 5, 6, 7, 8, 9)$  and 10, 11, 12, 13, 14, 15 as don't cares. (6)
- (b) Prove  $(A + B\bar{C} + C)\bar{C} = A\bar{B}\bar{C} + A\bar{B}C + \bar{A}B\bar{C}$  using Boolean Algebra. (4)
- (c) Discuss the concept of multiplexer in detail. (10)
4. (a) Explain the architecture of microprocessor in detail. (10)
- (b) Write a note on input/output schemes. (10)
5. Explain the concept of priority interrupt. (20)
6. Discuss the working of asynchronous data transfer in detail. (20)

7. Explain the following :
- (a) Programmable Peripheral Interface. (10)
  - (b) Programmable Interrupt Controller. (10)
8. Explain the concept of Associative Memory in detail. (20)
-

Reg. No. : .....

D 3003

Q.P. Code : [07 DSCA 03]

(For the candidates admitted from 2007-2008 onwards)

B.C.A. DEGREE EXAMINATION, JUNE 2008.

First Year

Part III — Computer Applications

*Allied I* — COMPUTER ORIENTED NUMERICAL  
AND STATISTICAL METHODS

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

1. (a) Find the root of  $x^3 - 3x - 5 = 0$  by Regula  
Falsi method. (10)

(b) Solve the following system by Gauss  
Elimination Method. (10)

$$x_1 - x_2 + x_3 = 1$$

$$-3x_1 + 2x_2 - 3x_3 = -6$$

$$2x_1 - 5x_2 + 4x_3 = 5$$

2. Find the values of  $\sin 18^\circ$  and  $\sin 45^\circ$  from the following table : (20)

$x^\circ$ :	0	10	20	30	40
-------------	---	----	----	----	----

$y = \cos x^\circ$ :	1.000	0.9848	0.9397	0.8660	0.7660
----------------------	-------	--------	--------	--------	--------

3. (a) Given the table :

$x$ :	0	0.1	0.2	0.3	0.4
-------	---	-----	-----	-----	-----

$e^x$ :	1	1.1052	1.2214	1.3499	1.4918
---------	---	--------	--------	--------	--------

Find the value of  $y = e^x$  when  $x = 0.38$ . (10)

- (b) Using Lagrange's interpolation formula, find the equation of the cubic curve that passes through the points  $(-1, -8)$ ,  $(0, 3)$ ,  $(2, 1)$  and  $(3, 2)$ . (10)

4. Compute the mode from the following series : (20)

Size of item :	0-5	5-10	10-15	15-20	20-25
----------------	-----	------	-------	-------	-------

Frequency :	20	24	32	28	20
-------------	----	----	----	----	----

Size of item :	25-30	30-35	35-40	40-45
----------------	-------	-------	-------	-------

Frequency :	16	34	10	8
-------------	----	----	----	---

5. From the prices of shares  $X$  and  $Y$  given below, state which share is more stable in value : (20)

$X$ :	55	54	52	53	56	58	52	50	51	49
-------	----	----	----	----	----	----	----	----	----	----

$Y$ :	108	107	105	105	106	107	104	103	104	101
-------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

6. Calculate correlation coefficient and regression coefficient for the following data : (20)

$$X: 2 \ 4 \ 6 \ 8 \ 10 \ 12 \ 14$$

$$Y: 4 \ 2 \ 5 \ 10 \ 4 \ 11 \ 12$$

Find the estimate of  $y$  when  $x = 13$ .

7. (a) Evaluate  $\sqrt{12}$  to four decimal places by Newton-Raphson method. (10)

(b) Solve the system of equations :

$$8x - y + z - 18 = 0, \quad 2x + 5y - 2z - 3 = 0 \quad ;$$

$$x + y - 3z + 6 = 0. \quad (10)$$

8. Find  $y(0.1)$ ,  $y(0.2)$  given  $y' = x - 2y$   $y(0) = 1$  taking  $h = 0.1$  by fourth order R.K. method. (20)

---