

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)

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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 : (7)
- (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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Q.P. Code : [07 DSCA 01]

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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)

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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 |
|---------------|-----------------|----------|
| (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)

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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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Q.P. Code : [07 DSCA 03]

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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)

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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)

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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

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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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