(Please write your Exam Roll No.) *Exam Roll No. .....*

END TERM EXAMINATION

THIRD SEMESTER [BCA] NOVEMBER-DECEMBER 2017

Paper Code: BCA-201 ***Subject: Mathematics-III***

(Batch 2011 Onwards)

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each unit.

Q1 (a) Find the lower and upper quartiles for the following distribution.

Scores	140-144	145-149	150-154	155-159	160-164	165-169	170-174	175-179	180-184
Frequency:	1	3	2	4	4	6	10	8	5

Scores	185-189	190-194	195-199
Frequency:	4	2	1

(b) Mean and S.d of a sample of 100 observations were calculated as 40 and 5.1 respectively. But by mistake one observation 40 was read as 50. Calculate the correct mean and S.d.

(c) Given r = 0.8, $\sum xy = 60$, $\sigma_y = 2.5$ and $\sum x^2 = 90$. Find the number of items (x and y are deviation from their arithmetic average).

(d) Differentiate PERT and CPM.

(e) Explain Vogel's Approximation method. **(5x5=25)**

Unit-I

Q2 (a) The first quartile of the following data is 21.5.

Class:	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Frequency:	24	?	90	122	?	56	20	23

Find the missing frequency and hence the values of mode. Given the total frequency is 460. **(6.5)**

(b) Find mean deviation about the mean for the following data: **(6)**

x_i:	2	5	6	8	10	12
f_i:	2	8	10	7	8	5

Q3 Calculate the mean and standard deviation for the following distribution:**(12.5)**

Marks:	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Students:	3	6	13	15	14	5	4

Unit-II

Q4 Calculate the coefficient of correlation by Karl Pearsons method from the following data relating to overhead expenses and cost of production:**(12.5)**

Overheads:	80	90	100	110	120	130	140	150	160
Cost:	15	15	16	19	17	18	16	18	19

P.T.O.

Q5 (a) From the data, obtain the regression equations: **(6.5)**

X:	6	2	10	4	8
Y:	9	11	5	8	7

(b) For a bivariate data, the $\overline{X} = 20$, $\overline{Y} = 45$. The regression coefficient of Y on X is 4 and that of X on Y is $\frac{1}{9}$. Find: (6)

(i) The coefficient co-rrelation.

(ii) The standard deviation of X if the standard deviation of Y is 12.

Unit-III

Q6 (a) Find the maximum value of 4x+5y subject to the constraints by Graphical method. **(6.5)**

$$x + y \leq 20$$
$$x + 2y \leq 35$$
$$x - 3y \leq 12$$
$$x \geq 0$$
$$y \geq 0$$

(b) Write the dual of following LPP. **(6)**

Max $Z = x_1 - x_2 + x_3$

Sub: $x_1 - x_2 - x_3 = 5$

$2x_1 + 5x_2 - x_3 \leq 2$

Also solve the dual LPP.

Q7 (a) Use simplex method to solve the L.P.P. **(6.5)**

Maximize $Z = 3x_1 + 4x_2 + x_3$

Subject to Constraints

$$x_1 + 2x_2 + 3x_3 \leq 90$$
$$2x_1 + x_2 + x_3 \leq 60$$
$$3x_1 + x_2 + 2x_3 \leq 80$$

where $x_1, x_2 \,\&\, x_3 \geq 0$

(b) Solve: Min $Z = 2x_1 + 3x_2 + x_3$.

Sub: $x_1 + x_2 - 2x_3 \geq 1$,

$x_1 - x_3 = 5$,

$x_1,\ x_2,\ x_3 \geq 0$. **(6)**

Unit-IV

Q8 A company has four plants P_1, P_2, P_3, P_4 from which it supplies to three markets M_1, M_2, M_3. Determine the optimal transportation problem plan from data giving the plant to market shifting costs, quantities available at each plant and quantities required at each market. **(12.5)**

Plants → Market ↓	P_1	P_2	P_3	P_4	Required
M_1	19	14	23	11	11
M_2	15	16	12	21	13
M_3	30	25	16	39	19
Availability	6	10	12	15	43

Q9 A company has 5 jobs on which to do 6 operators. Each operator can be assigned to one and only one job. The cost of each operator on each Job is given below. What are the job assignment which will minimize the cost? **(12.5)**

P.T.O.

		Jobs				
		J_1	J_2	J_3	J_4	J_5
Operator	O_1	6	2	5	3	6
	O_2	2	5	8	7	7
	O_3	7	8	6	9	8
	O_4	6	2	3	4	5
	O_5	9	3	8	9	7
	O_6	4	7	4	6	8

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(Please write your Exam Roll No.) *Exam Roll No. .....*

END TERM EXAMINATION

THIRD SEMESTER [BCA] NOVEMBER-DECEMBER 2017

Paper Code: BCA-203 ***Subject: Computer Architecture***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each unit.

Q1 (a) Explain instruction set completeness. Is the Instruction set of the Basic Computer Complete? Justify your answer.
(b) Explain Direct Memory Access (DMA).
(c) Explain the various difficulties encountered in an instruction pipeline. Also explain how these can be avoided.
(d) Explain associative memory and how it function.
(e) Design a 4 bit Adder-Subtractor. **(5x5=25)**

Unit-I

Q2 (a) Explain the operation of a 4 bit Arithmetic Circuit. **(7.5)**
(b) Explain Instruction cycle. **(5)**

Q3 (a) The outputs of 4 registers R0, R1, R2, R3 are connected through 4 to 1 multiplexer to the input of a fifth register R5. Each register is 8 bits long. The following transfer are dictated by four timing variables T0, T1, T2, T3 as follows:

T0: R5 <- R0
T1: R5 <- R1
T2: R5 <- R2
T3: R5 <- R3

The timing variables are mutually exclusive that means only one can be active at one time while the remaining three are 0. Draw the block diagram showing the transfers. **(7.5)**

(b) The content of the AC in the Basic Computer is hexadecimal A937. The initial value of E is 1. Determine the contents of AC, E, PC, AR & IR in hexadecimal after the execution of the CLA instruction. Repeat 11 times more starting from each register reference instruction. The initial value of PC is hexadecimal 021. **(5)**

Unit-II

Q4 (a) Explain the various types of Instruction Formats. **(7.5)**
(b) Explain Instruction pipeline. **(5)**

Q5 (a) Explain the various Addressing Formats in detail. **(7.5)**
(b) Explain memory interleaving. **(5)**

Unit-III

Q6 (a) Construct a 4x4 Array Multiplier. **(7.5)**
(b) Explain the working of a First in First Out Buffer. **(5)**

P.T.O.

Q7 (a) Draw a flowchart for Booth Multiplication. **(7.5)**
(b) Explain Asynchronous Serial Transfer in detail. **(5)**

Unit-IV

Q8 (a) A virtual memory has address space of 8K words, memory space of 4K words & page & block sizes of 1K words. The following page reference occur at a given time:
4 2 0 1 2 6 1 4 0 1 2 3 5 7
Determine which 4 pages are there in main memory using LRU & FIFO strategy. **(7.5)**
(b) What is the purpose of a cache memory? Explain its Writing policies. **(5)**

Q9 What is Virtual Memory? Why is it required? Explain Logical to physical address mapping using segment and page table with the help of an example. **(12.5)**

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(Please write your Exam Roll No.) *Exam Roll No. .....*

END TERM EXAMINATION

THIRD SEMESTER [BCA] NOVEMBER-DECEMBER 2017

Paper Code: BCA 205 ***Subject: Front End Design Tools VB.Net***

Time : 3 Hours ***Maximum Marks :75***

Note: Attempt any five questions including Q.No. 1 which is compulsory. Select one question from each unit.

Q1. Answer following: **(2.5x10=25)**

a) What is exception handling?

b) What is container control?

c) What are namespaces?

d) What are advantages of having parent and child forms?

e) Write short note on Messagebox.

f) Explain the 3-tier computing Model.

g) What is Data Adapter?

h) Write a program to check whether given number is odd or even using console application.

i) What are the different data types in VB.Net?

j) What is Code Access Security?

Unit-I

Q2. a) What are the major components of the .Net framework? **(6.5)**

b) Differentiate between CLR, CTS & CLS ? **(6)**

Q3. a) What is IDE? What are the various components in IDE? **(6.5)**

b) What is Memory Management in .Net? Describe its types. **(6)**

Unit-II

Q4. a) What is array list? Explain with suitable example. **(6.5)**

b) What are the differences between VB and VB.Net in terms of their features and application? **(6)**

Q5. a) Explain Dynamic array? Explain with suitable example. **(6.5)**

b) What is Enumeration? Explain with example. **(6)**

Unit-III

Q6. a) Define the following. **(6.5)**
i) Inheritance ii) Re usability iii) Overloading

b) Explain the following controls: **(6)**
i) Textbox ii) Timer iii)Combobox iv) Checkbox
v) Label vi) Picturebox

P.T.O.

Q7. a) Create a class called Employee with the data member's empno, ename, age, salary and experience the following methods. **(6.5)**
i) Calculation of salary ii) Calculation of experience
iii) Display the detail about the employee.

b) Write a program to print Fibonacci series. **(6)**

Unit-IV

Q8. a) Write the code to insert the records into the employee table containing the columns such as Employee Id, Employee Name, Salary, Employee Designation, Employee Department. **(6.5)**

b) Write short notes on the following: **(6)**
i) DataSets ii) Data Adapter c) Data Binding

Q9. a) Explain in detail the various components of ADO.Net. **(6.5)**

b) Write steps for creating crystal report. **(6)**

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END TERM EXAMINATION

THIRD SEMESTER [BCA] NOVEMBER-DECEMBER 2017

Paper Code: BCA-207 ***Subject: Principles of Accounting***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each unit. Calculators are allowed.

Q1 Write short note on **(any five)** following: **(3x5=15)**

(a) Double entry system
(b) Objectives of accounting
(c) Accounting conventions
(d) Various types of errors in Accounting Books
(e) Depreciation reserve
(f) Petty cash book

Unit-I

Q2 (a) Define accounting and explain the different branches of accounting. **(10)**
(b) Explain the different users of accounting information. **(5)**

Q3 Explain any three accounting concepts with examples. **(5x3=15)**

Unit-II

Q4 Record the following journal entries for XYZ company for the month of April:

(a) Assets: Cash Rs 2,00,000, Furniture Rs 50,000, Machinery Rs 50,000
Liabilities: Capital Rs 2,00,000; Shyam Rs 80,000, Accounts Payable Rs 20,000.
(b) Opened a bank account with PNB Rs 20,000.
(c) Withdrawn goods for personal use (Sale price Rs 2000, Cost price Rs 1800).
(d) Recovered from Ro half the amount (Rs 200) which was written off as bad debts earlier.
(e) Purchased goods from Ram of Rs 20,000; Purchased goods from Raj for cash Rs 5000.
(f) Paid salaries out of personal cash Rs 40,000.
(g) Cash sales at list price of Rs 4000 with 10% trade discount and 5% cash discount.
(h) Paid Ram by cheque of Rs 18000 in full settlement.
(i) Paid advance rent to the landlord of Rs 10,000.
(j) Rs 5000 due from Sohan are bad debts. **(1.5x10=15)**

Q5 What is a trial balance? What are its objectives? How is it prepared? Is this the proof of accuracy in books of accounts? **(15)**

Unit-III

Q6 (a) Explain the accounting treatment of bad/doubtful debts and provision for bad/doubtful debts with examples. **(6)**
(b) Differentiate between the following: **(3x3=9)**
(i) Profit and Loss Account and Trading Account.
(ii) Outstanding expenses and Prepaid expenses.
(iii) Capital expenditure and Revenue expenditure.

P.T.O.

Q7 Prepare the Trading, Profit and Loss Account and Balance sheet for the year ended 31st Dec, 2014 from the following trial balance: **(15)**

Debit Balance	**Amount (Rs)**	**Credit Balance**	**Amount (Rs)**
Opening stock	40,000	Sales	3,55,000
Return inwards	5,000	Loan @10% interest	15,000
Purchases	2,52,000	Capital	60,000
Carriage outwards	1,000	Creditors	25,000
Carriage inwards	5,000	Return outwards	2000
Direct expenses	5,000	Bank overdraft	10,000
Furniture	5,000	Bills payable	14,000
Buildings	45,000	Rent received	3,000
Plant & Machinery	40,000	Discount	3,000
Debtors	30,000	Provision for doubtful debts	2,000
Discount	2,000		
Tax	3,000		
Bad debts	1,500		
Salaries	20,000		
Dividend paid	5,000		
General expenses	5,000		
Rent	3,000		
Bills receivables	21,500		
Total	4,89,000	Total	4,89,000

Following adjustment are to be made:
(a) Stock in hand on 31st December, 2015 was Rs 42000.
(b) Depreciate building Rs 2000 and plant & machinery Rs 1000.
(c) Provision for bad debts at 5% on debtors.
(d) Outstanding rent Rs 1000 and prepaid rent Rs 1000.
(e) Interest on capital @ 5%.

Unit-IV

Q8 (a) What is depreciation? Explain the need for providing depreciation. **(6)**
(b) A firm whose accounting year is the calendar year purchased machinery on 1st April, 2012 machinery costing Rs 30,000. It further purchased machinery on 1st October, 2013 costing Rs 20,000 and on 1st July, 2013 costing Rs 10,000. On 1st January. 2014 one third of the machinery which was installed on 1st April. 2012 became obsolete and was sold for Rs 3,000. Show how the machinery account would appear in the books of company for 3 years. The depreciation is charged @ 10% p.a. as per Written Down Value Method. **(9)**

Q9 Define inventory and list the objectives of inventory valuation. Explain the different inventory valuation methods with examples. **(15)**

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END TERM EXAMINATION

THIRD SEMESTER [BCA] NOVEMBER - DECEMBER 2017

Paper Code: BCA-209 ***Subject: Object Oriented Programming Using C++***
(Batch 2011 onwards)

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions including Q. no.1 which is compulsory. Select one question from each unit.

Q1 (a) What are enumeration variables? How are they declared? Explain. **(2.5)**
(b) What is Dynamic memory allocation? How does it help in building complex programs? **(2.5)**
(c) How does an inline function differ from a preprocessor macro? **(2.5)**
(d) "A class is a way to accomplish data hiding." Comment with a suitable example. **(2.5)**
(e) What are namespaces? List out some of the advantages of namespaces. **(2.5)**
(f) Discuss two methods of opening a file during file handling in C++. **(2.5)**
(g) What are nameless objects? **(2.5)**
(h) Is it possible to define member functions in private section of the class? Illustrate how one can use these functions with a suitable example. **(2.5)**
(i) Distinguish between composition and classification hierarchies. **(2.5)**
(j) Define Generic class. Illustrate with example. **(2.5)**

UNIT-I

Q2 (a) What do you mean by Dynamic Memory Allocation? How can we achieve in C++? Illustrate with an example program. **(6.5)**
(b) Can a programmer use free( ) pointers allocated with new operator? Can he delete pointers allocated malloc( )? Explain briefly. **(3)**
(c) How does the 'const' differ in C++ from C. Explain with a brief example? **(3)**

Q3 (a) What is Procedure Oriented Programming? How is it different from Object Oriented Programming? **(4.5)**
(b) Explain Reference variable with a suitable example. What is the principle reason of passing arguments by Reference? Differentiate between passing arguments by using pointer variables and reference variable. Explain with C++ program. **(6)**
(c) Explain the advantages of Function Prototyping with example. **(2)**

UNIT-II

Q4 (a) What is the difference between member function defined inside and outside the body of a class? How inline member functions defined outside the body of a class? Explain with example. **(4.5)**
(b) Explain the concept of overloaded constructors with a suitable example. **(5)**
(c) Write a short note on Array of objects with example. **(3)**

Q5 (a) Write a program to illustrate the concept of object as an argument and returning objects. **(6)**
(b) What is this pointer? What happens on the statement: delete this; in a class. Write a program to illustrate the use of this pointer. **(3.5)**
(c) Write a short note on copy construction with suitable example. **(3)**

P.T.O.

UNIT-III

Q6 (a) Explain the concept of nested class with suitable example. **(5)**

(b) Write a C++ program to overload "==" (equals to) operator to compare two strings. **(5)**

(c) Differentiate between static and dynamic binding. **(2.5)**

Q7 (a) Explain parametric polymorphism with an example code. **(4)**

(b) Discuss the concept of virtual function. Take a suitable example to demonstrate the behavior of virtual function. **(5)**

(c) Discuss ambiguity resolution in multiple inheritance. **(3.5)**

UNIT-IV

Q8 (a) Distinguish between Overloaded function and function template. Explain with the help of an example. **(6)**

(b) Write a C++ program to count the number of characters and digits in a file. This file have first to be created by the user only. **(6.5)**

Q9 (a) Explain the working of seekg( ), seekp( ), tellg( ), tellp( ), read( ), writer ( ) functions in stream classes. **(6)**

(b) Explain the concept of persistent object. **(2.5)**

(c) Explain the try/catch structure in C++ and its variants from the exception handing. **(4)**

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