

BCA 1st Semester (Honours) Examination, 2019-20

BACHELOR OF COMPUTER APPLICATION

Course ID :

Course Code : BCA-103

Course Title: Mathematics-I

Time: 3 Hours

Full Marks: 80

The figures in the margin indicate full marks.

Group-A

1. Answer *all* the questions:

1×10=10

(i) Let $A = \{1, 3, 5, 7, 19, 25\}$, $B = \{3, 5, 18, 22, 25\}$. Then $(A - B) \cup (B - A)$ is

- (a) $\{1, 3, 5, 7, 18, 19, 22, 25\}$ (b) ϕ
 (c) $\{1, 3, 5, 25\}$ (d) $\{1, 7, 18, 19, 25\}$
 (e) None of these

(ii) The smallest integer for which $\left(\frac{1+i}{1-i}\right)^n = 1$ is

- (a) $n = 8$ (b) $n = 12$
 (c) $n = 16$ (d) $n = 18$
 (e) None of these

(iii) The unit vector which is perpendicular to $2\hat{i} + \hat{j} - 2\hat{k}$ and $7\hat{i} - 5\hat{j} + 9\hat{k}$ is

- (a) $\frac{1}{\sqrt{26}}(\hat{i} + 4\hat{j} + 3\hat{k})$ (b) $\frac{1}{\sqrt{26}}(-\hat{i} - 4\hat{j} - 3\hat{k})$
 (c) $\frac{1}{\sqrt{26}}(\hat{i} - 4\hat{j} + 3\hat{k})$ (d) $\frac{1}{\sqrt{26}}(\hat{i} - 3\hat{j} + \hat{k})$
 (e) None of these

(iv) The slope of the line $7x - 4y - 5 = 0$ is

- (a) $-\frac{7}{4}$ (b) $\frac{4}{7}$
 (c) $\frac{7}{4}$ (d) $-\frac{4}{7}$
 (e) None of these

(v) If α, β, γ are the roots of $x^2 - rx + s = 0$ then $\sum \frac{1}{\alpha} = ?$

- (a) $\frac{r}{s}$ (b) $\frac{s}{r}$
 (c) r (d) s
 (e) None of these

(vi) A mapping $f: R \rightarrow R$ given by $f(x) = x^2, x \in R$ is

- (a) injective (b) surjective
 (c) bijective (d) many-one
 (e) None of these

- (vii) The center of the conic $4x^2 - 9y^2 + 8x + 36y = 68$ is
- (a) (2, 1) (b) (2, -1)
 (c) (-2, -1) (d) (-1, 2)
 (e) None of these
- (viii) The equation $4(x - 2)^2 = 5(y + 3)$ represents
- (a) circle (b) ellipse
 (c) parabola (d) hyperbola
 (e) None of these
- (ix) The equation $x^2 + y^2 + 2gx + 2fy + c = 0$ represents point circle when
- (a) $g^2 + f^2 = -c$ (b) $g^2 - f^2 = c$
 (c) $g^2 + f^2 = c$ (d) $f^2 - g^2 = c$
 (e) None of these
- (x) If A be a square matrix, then $\frac{AdjA}{|A|}$ is
- (a) A^T (b) A^{-1}
 (c) $(A^{-1})^T$ (d) $(A^T)^{-1}$
 (e) None of these

Group-B

2. Answer any ten questions:

2×10=20

- (a) If $A = \{x: -10 \leq x \leq 15\}$ and $B = \{y: 0 \leq y \leq 20\}$, find $A \cap B$ and $A - B$.
- (b) If $X = \{0, 5\}$ and $Y = \{2, 5\}$, find $X \times Y$ and $Y \times X$.
- (c) Find the nature of the roots of the equation $x^2 - 2\sqrt{7}x - 2 = 0$.
- (d) Define 'Domain' and 'range' of a function.
- (e) Find the focus and latus rectum of the parabola $3x^2 = 8y$.
- (f) Find the exponent form of $\frac{1}{\sqrt{2}}(1 + i)$.
- (g) If $A = \begin{pmatrix} -4 & 5 \\ 1 & -3 \end{pmatrix}$, find A^{-1} .
- (h) Define 'Dot Product' of two vectors and if Dot Product of two vectors is zero, what will be your conclusion?
- (i) Find the nature of the conic $\frac{9}{r} = 5 - 4 \cos \theta$.
- (j) Show that vector cross product is not commutative.
- (k) If the mapping $f: R \rightarrow R$ be defined by $f(x) = 3x^2 - 14x + 10$, then find $f^{-1}(2)$.
- (l) Find the value of the determinant:

$$\begin{vmatrix} 1+x & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix}$$

- (m) State 'De Moivre's theorem.
 (n) If α and β be the roots if the equation $x(x - 3) = 4$, find the value of $\alpha^2 + \beta^2$.
 (o) If the ratio of two roots of $x^2 - px + q = 0$ be 1:2, find the relation of p and q .

Group-C

3. Answer *any four* questions:

5×4=20

(a) Without expanding, prove that

$$\begin{vmatrix} 1 & ab & \frac{1}{a} + \frac{1}{b} \\ 1 & bc & \frac{1}{b} + \frac{1}{c} \\ 1 & ca & \frac{1}{c} + \frac{1}{a} \end{vmatrix} = 0.$$

(b) Solve the following system of linear equation by matrix inversion method:

$$\begin{aligned} \frac{2}{x} + \frac{3}{y} - \frac{4}{z} &= -3 \\ \frac{1}{x} + \frac{2}{y} + \frac{6}{z} &= 2 \\ \frac{3}{x} - \frac{1}{y} + \frac{2}{z} &= 5 \end{aligned}$$

(c) Solve the following set of equations by Cramer's Rule:

$$3x + y + z = 10; \quad x + y - z = 0; \quad 5x - 9y = 1$$

(d) If $A = \begin{pmatrix} 2 & 1 \\ 3 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & -2 \\ -1 & 1 \end{pmatrix}$, then show that $(AB)^{-1} = B^{-1}A^{-1}$.

(e) Define 'Group' and show that the set of all integers form a group with respect to usual addition.

(f) Find the 'domain' and 'Range' of the function $f(x) = \frac{3x-5}{x^2-1}$

Group-D

4. Answer *any three* questions:

10×3=30

(a) Reduce the equation $x^2 - 2xy + 2y^2 + 4x + 5y + 1 = 0$ to standard form and hence state the nature of the conic.

(b) Find the locus of the middle point of the conic $\frac{l}{r} = 1 + e \cos \theta$.

(c) (i) If α, β, γ roots of the equation $x^3 + px^2 + qx + r = 0$, find the value of

$$\left(\frac{1}{\beta} + \frac{1}{\gamma} - \frac{1}{\alpha}\right) \left(\frac{1}{\gamma} + \frac{1}{\alpha} - \frac{1}{\beta}\right) \left(\frac{1}{\alpha} + \frac{1}{\beta} - \frac{1}{\gamma}\right).$$

(ii) Express $A = \begin{bmatrix} 2 & 3 \\ 5 & 1 \end{bmatrix}$ as sum of a symmetric and a skew-symmetric matrix. 5+5=10

(d) (i) Solve $x^3 - 3x - 36 = 0$ by Cardon's method.

(ii) If $x = -1 + i\sqrt{2}$ then find the value of $x^4 + 4x^3 + 6x^2 + 4x + 9$. 5+5=10

- (e) (i) If $\hat{i} + 2\hat{j} - 3\hat{k}$; $p\hat{i} - \hat{j} + \hat{k}$ and $3\hat{i} - 4\hat{j} + 5\hat{k}$ are coplanar, find the value of p .
- (ii) If $\vec{a} + \vec{b} + \vec{c} = \vec{0}$ and $|\vec{a}| = 3, |\vec{b}| = 5$, and $|\vec{c}| = 7$, then find the angle between \vec{a} and \vec{b} . 5+5=10
- (f) (i) Define subspace of a vector space with an example.
- (ii) Is the set of natural numbers form a group w.r.t. usual addition?
- (iii) Is the set of rational numbers form a group w.r.t. usual multiplication? 4+3+3=10
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BCA 1st Semester (Honours) Examination, 2019-20**BACHELOR OF COMPUTER APPLICATION****Course ID :****Course Code : BCA-104**

Course Title: Principles of Accounting

Time: 4 Hours**Full Marks: 80***The figures in the margin indicate full marks.**The questions are of equal value.***Group-A****1. Answer all the questions:****1×10=10**

(For each question choose the best alternative from the options)

- (i) Double entry system is introduced by
 (a) Luca Pacioli (b) Adam Smith
 (c) Keynes (d) None of them
- (ii) Select the capital expenditure.
 (a) Rent paid (b) Salary paid
 (c) Advertisement (d) Investment purchased
- (iii) Select the Revenue Expenditure.
 (a) Rent paid (b) Investment
 (c) Building (d) None of these
- (iv) Choose the real account.
 (a) Capital A/c (b) Rent A/c
 (c) Building A/c (d) None of these
- (v) Choose Nominal A/c.
 (a) Capital A/c (b) Rent A/c
 (c) Building A/c (d) None of these
- (vi) Choose Personal A/c.
 (a) Ram A/c (b) Rent A/c
 (c) Building A/c (d) None of these
- (vii) Salary paid to watchman is
 (a) Fixed Cost (b) Variable Cost
 (c) Semi Variable Cost (d) None of these
- (viii) Direct Material is
 (a) Fixed expenses (b) Variable expenses
 (c) Semi Variable expenses (d) None of these

(ix) Advertisement is grouped under

(a) Office o/h

(b) Factory o/h

(c) Selling o/h

(d) None of these

(x) Dividend paid is

(a) Operating expenses

(b) Financing expenses

(c) Cost expenses

(d) None of these

Group-B

2. Answer *any ten* questions:

2×10=20

(a) What do you mean by double entry system?

(b) Define Accounting.

(c) What is Intangible Assets?

(d) What do you mean by Capital Expenditure?

(e) Define Journal.

(f) What is Trading A/c?

(g) What do you mean by Contra Entry?

(h) Write down two causes of depreciation.

(i) What is Accounting Cycle?

(j) Define Accounting Equation.

(k) What is Costing?

(l) What do you mean by Marginal Costing?

(m) Define Stores Ledger.

(n) What do you mean by contribution?

(o) What is Break Even-Point?

Group-C

3. Answer *any four* questions:

5×4=20

(a) briefly describe the Golden Rules.

(b) Differentiate Double Entry and Single Entry System.

(c) What are the advantages of Marginal Costing?

(d) What are the differences between Stores Ledger and Bin Card.

(e) From the following ledger balances prepare Trial Balance as on 31.3.19.

Opening Stock ₹ 1,700; Purchase ₹ 1,40,000; Return Inward ₹ 2,500; Carriage ₹ 350; Salary ₹ 5,600; Rent ₹ 600; General expenses ₹ 200; Commission on sale ₹ 5,000; Furniture ₹ 20,000; Debtors ₹ 18,000; Creditors ₹ 53,950; Sales ₹ 1,00,000; Capital ₹ 40,000.

(f) Prepare stores ledger under FIFO method.

2019 April	UNITS	RATE (₹)
1. Opening balance	1,000	5.00
3. Received	5,000	6.00
7. Issued	3,000	—
14. Issued	2,000	—
20. Received	3,000	5.00
30. Issued	2,000	—

Group-D

4. Answer *any three* questions:

10×3=30

- (a) (i) What are the functions of Financial Accounting?
(ii) What are the advantages of Standard Costing?
- (b) (i) Write five functions of Cost Accounting.
(ii) Differentiate Fixed Assets and Current Assets.
- (c) Prepare a Cost sheet.

Stock:	1.4.19.	30.4.19.
Direct Material	7,000	5,600
W.I.P.	3,000	2,000
Finished goods	5,000	9,000
Purchase of Material	₹ 84,000	
Direct wages	₹ 28,000	
Factory Rent	₹ 1,600	
Office Rent	₹ 2,000	
Selling Overhead	₹ 3,000	
Sales	₹ 1,80,000	

(d) From the following data, calculate

(i) P/V ratio	(ii) BEP	(iii) Margin of safety
Sales	₹ 10,00,000	
Fixed Cost	₹ 3,00,000	
Profit	₹ 2,00,000	

(e) From the following informations prepare a double column Cash Book.

Jan. 2019

1. Balance of cash ₹ 10,000; Bank ₹ 12,000
4. Received commission by cheque ₹ 1,000
7. Purchased goods by cheque ₹ 2,500
10. Drew from bank ₹ 1,000
13. Drew for personal use ₹ 2,000
16. Goods sold ₹ 6,000
18. Paid cash into bank ₹ 2,000
23. Loan taken ₹ 10,000; half deposited into bank.
27. Bank charges ₹ 100
30. Allowed interest on deposit ₹ 200
31. Wages paid by cheque ₹ 1,000

(f) From the following Trial Balance prepare Trading A/c and P/L A/c

Trial Balance as on 31.3.19

Particulars	Dr. (₹)	Cr. (₹)
Capital	—	56,900
Debtor	30,660	—
Creditors	—	24,400
Opening stock	70,500	—
Purchases	64,300	—
Returns	3,100	1,200
Salaries	15,000	—
Office expenses	2,810	—
Bad debt	6,500	—
Rent	7,310	—
General expenses	1,340	—
Discount	—	500
Carriage outward	5,120	—
Furniture	6,300	—
Insurance	900	—
Cash	660	—
Sales	—	1,31,500
	<u>2,14,500</u>	<u>2,14,500</u>

Adjustment:

- (i) Closing stock ₹ 25,000;
- (ii) Salary outstanding ₹ 2,500
- (iii) Prepaid Rent ₹ 310

BCA 1st Semester (Honours) Examination, 2019-20 (CBCS)**BACHELOR OF COMPUTER APPLICATION****Course ID : 13511****Course Code : BCA-CC-01**

Course Title : Computer Fundamental and PC Software

Time: 2 Hours**Full Marks: 50***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words
as far as practicable.***Group-A**

1. Answer *all* the following questions: 1×10=10
- (i) According to Boolean Law $A + 1 = ?$
- (a) 1 (b) A
 (c) 0 (d) A'
 (e) None of these
- (ii) The basic architecture of computer was developed by
- (a) John Von-Neumann (b) Charles Babbage
 (c) Blaise Pascal (d) Garden Moore
 (e) None of them
- (iii) Which of the following memory is Non-Volatile?
- (a) SRAM (b) DRAM
 (c) ROM (d) All of these
 (e) None of these
- (iv) The normally interact with the system via user interface provide by the application software—
- (a) Programmers (b) Developers
 (c) Tester (d) User
 (e) None of these
- (v) Which of the following is not an advantage of a flowchart?
- (a) Better Communication (b) Efficient Coding
 (c) Systematic Testing (d) Improper Documentation
 (e) None of these

- (vi) 'Reference' command can be taken from which menu?
- (a) Insert (b) Format
(c) Table (d) File
(e) None of these
- (vii) The largest two digit hexa-decimal number is
- (a) $(FD)_{16}$ (b) $(FE)_{16}$
(c) $(FF)_{16}$ (d) $(EF)_{16}$
(e) None of these
- (viii) Compiler and Interpreters are themselves
- (a) High level language (b) Codes
(c) Programs (d) Mnemonics
(e) None of these
- (ix) Fifth Generation Computers are based on
- (a) Artificial Intelligence (b) Programming Intelligence
(c) System Knowledge (d) VVLSI
(e) None of these
- (x) GUI stands for
- (a) Graph Use Interface (b) Graphical Universal Interface
(c) Graphical User Interface (d) Graphical Unique Interface
(e) None of these

Group-B

2. Answer *any five* questions:

2×5=10

- (a) Convert $(9AE \cdot BC)_{16}$ to Octal.
- (b) Prove that $\overline{A'B} + AB + A'B' = A' + B$.
- (c) Differentiate between 1'S complement and 2'S complement.
- (d) What is E-mail?
- (e) What is Computer Virus?
- (f) What is the name of last column of Excel Worksheet?
- (g) What is Minterm?
- (h) What do you mean by Multiprogramming Operating System?

Group-C

3. Answer *any four* questions: 5×4=20
- (a) (i) Explain different view of MS-Words. 3+2=5
(ii) How do you insert animation? Explain. 3+2=5
- (b) Explain different classes of Memory Hierarchy. 5
- (c) (i) Perform the subtraction using 2'S complement arithmetic = $(11101)_2 - (00101)_2$.
(ii) Design X-OR gate using NAND gates only. 3+2=5
- (d) (i) What is USB?
(ii) What are the different types of software? 1+4=5
- (e) Draw the Flowchart to find the greatest of three (3) numbers. 5
- (f) What do you mean by Canonical form? What are the functions of Operating System? 2+3=5

Group-D

4. Answer *any one* question: 1×10=10
- (a) (i) Simplify the following Expression:

$$Y = A + A'B + A'B'C + A'B'C'D$$
- (ii) Obtain the following in SOP and POS form:

$$F(A, B, C) = (A' + B)(B' + C)$$
- (iii) Simplify the following function and Design the circuit using Gates:

$$F(W, X, Y, Z) = \sum_m(0, 2, 6, 8, 10, 11, 14)$$
 3+3+4=10
- (b) (i) Write the steps to create a pie chart in MS-Excel.
(ii) How do you insert Mathematical Equation in MS-Word? Explain.
(iii) What do you mean by Header and Footer? 5+4+1=10
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BCA 1st Semester (Honours) Examination, 2019-20 (CBCS)**BACHELOR OF COMPUTER APPLICATION****Course ID : 13512****Course Code : BCA-CC-02**

Course Title : Introduction to C Programming

Time: 2 Hours**Full Marks: 50***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Group-A****1. Answer all the following questions: 1×10=10**

(i) How many main () function we can have in our project?

- (a) 1 (b) 2
 (c) No limit (d) Depends on compiler
 (e) None of these

(ii) Output for the following program:

```
int main ()
{
extern int i;
i = 20
print F ("%d, size of (i));
return 0;
}
```

- (a) 20 (b) 0
 (c) undefined to i (d) linked error
 (e) None of these

(iii) Output for the following program:

```
int x = 10;
int main ()
{
int x = 20;
print F ("%d",x);
return 0;
}
```

- (a) 10 (b) 0
 (c) compilation error (d) undefined
 (e) None of these

(iv) Output for the following program:

```
int main ()
{
int a = 5;
int b = 10;
int c = a + b;
printf (" %c" ;C)
}
```

- (a) 0 (b) 15
(c) undefined (d) any other compiler error
(e) None of these

(v) For C Programming language

- (a) constant expression are evaluated at compile.
(b) string constants be concatenated at compile time.
(c) size of array should be known at compile time.
(d) All of the above
(e) None of the above

(vi) What is the maximum number of dimension an array in C may have?

- (a) two
(b) eight
(c) twenty
(d) Theoretically no limit. The only practical limit are memory size and compiler.
(e) None of the above

(vii) If x is an array of integer, then value of F & $X[1]$ is same as

- (a) $\& X [i - 1] + \text{size of (int)}$ (b) $X + \text{size of (int)} * i$
(c) $X + i$ (d) $X - i$
(e) None of these

(viii) Minimum number of inter change needed to convert the array 89, 19, 40, 14, 17, 12, 10, 17, 2, 5, 7, 11, 6, 9, 70 into a heap with the maximum element at the root in

- (a) 0 (b) 1
(c) 2 (d) 3
(e) None of these

(ix) Name the loop that executes at least once.

- (a) For (b) If
(c) Do-While (d) While
(e) None of these

- (x) A pointer pointing to a memory location of the variable even after deletion of the variable known as
- (a) For pointer
 - (b) Null pointer
 - (c) Void pointer
 - (d) Dangling pointer
 - (e) None of these

Group-B

Answer *any five* questions:

2×5=10

1. When is the “void keyword” used in a function?
2. What are header files and what are it’s uses in C Programming?
3. What is the difference between getch () and getche ()?
4. Write a program to print “hello world” without using semi colon.
5. What is static variable?
6. What are local static variables? What are their uses?
7. What is the difference between i++ and ++i?
8. Does a break is required by default care in switch statement?

Group-C

Answer *any four* questions:

5×4=20

1. Write a program in C to print the prime number in between 1 to 100.
2. Rules for construction integer constant. Write a program to calculate the largest among three numbers.
3. What is the difference between sting and array? What is modulus operator?
4. What is loop? Explain different type of loops with example.
5. What is call by value and call by reference? Explain with an example.
6. Write a program in C that will accept an integer from command line and will check whether this integer is even or odd.

Group-D

Answer *any one* question:

1×10=10

1. What is string? A function that takes a string as argument and calculates its length. A function which takes two string and appends the second at the end of the first. 2+4+4=10
 2. (i) What is file? Write a program in C to convert the content of a given text file to upper case.
(ii) Write a program in C to check to a given string is palindrome or not. 2+5+3=10
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BCA 1st Semester (Honours) Examination, 2019-20 (CBCS)

BACHELOR OF COMPUTER APPLICATION

Course ID : 13514

Course Code : BCA-GE-01

Course Title : Mathematics-I

Time: 3 Hours

Full Marks: 80

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group-A

1. Answer all the questions: 1×10=10

- (i) If A be an orthogonal matrix, then A^{-1} will be
- (a) A (b) A^2
 (c) A^T (d) A^3
 (e) None of these
- (ii) The conic $\frac{8}{r} = 4 - 5 \cos \theta$ represents
- (a) a parabola (b) an ellipse
 (c) a hyperbola (d) a circle
 (e) None of these
- (iii) If $x = \cos \theta + i \sin \theta$, then $x^n - \frac{1}{x^n}$ is equals to
- (a) $2i \sin n\theta$ (b) $2i \cos n\theta$
 (c) $2 \sin n\theta$ (d) $2 \cos \theta$
 (e) None of these
- (iv) If $A = \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ then
- (a) $AB = 0$ (b) $BA = 0$
 (c) $AB = BA = 0$ (d) $AB \neq BA$
 (e) None of these
- (v) If $f(x) = x^3 - 3x^2 + 4x - 3$ then $f(\sqrt{2})$ is
- (a) $6\sqrt{2}$ (b) $6\sqrt{2} - 9$
 (c) 9 (d) $6\sqrt{2} + 9$
 (e) None of the above
- (vi) If $\vec{a} = 2\vec{i} - \vec{j}$ and $\vec{b} = 3\vec{i} - 2\vec{j} + 4\vec{k}$ then value of $\vec{a} \times \vec{b}$ is
- (a) $4\vec{i} - 8\vec{j} - \vec{k}$ (b) $-4\vec{i} - 8\vec{j} + \vec{k}$
 (c) $4\vec{i} - 8\vec{j} + \vec{k}$ (d) $-4\vec{i} - 8\vec{j} - \vec{k}$
 (e) None of these

- (vii) The modulus of the complex numbers $\sqrt{12} + 6\left(\frac{1-i}{1+i}\right)$ is
- (a) 4 (b) $4\sqrt{3}$
 (c) $6\sqrt{3}$ (d) $\sqrt{3}$
 (e) None of these
- (viii) If $A \subseteq B$ and $B \subseteq A$ then
- (a) $A = \phi$ (b) $A = B$
 (c) $B \neq \phi$ (d) $A \cap B = \phi$
 (e) None of these
- (ix) If α, β, γ are the roots of the equation $x^2 - px + q = 0$ then $\sum 1/\alpha =$
- (a) p/q (b) q/p
 (c) p (d) q
 (e) None of these
- (x) The centre of the circle $2x^2 + 2y^2 + 5/2x - 7/2y + 3 = 0$ is
- (a) $(5/2, -7/2)$ (b) $(-5/4, 7/4)$
 (c) $(-5/2, 7/2)$ (d) $(5/4, -7/4)$
 (e) None of these

Group-B

2. Answer any ten questions:

2×10=20

- (a) If $x = \{0, 1\}$ and $y = \{1, 2\}$ find $x \times y$.
- (b) If $A = \{x : -10 \leq x \leq 10\}$ and $B = \{y : 0 \leq y \leq 20\}$ find $A \cup B$ and $A - B$.
- (c) What is mapping?
- (d) Find the value of $\sqrt{-3 + \sqrt{-3 + \sqrt{-3 + \dots}}}$
- (e) Find the Polynomial $3x^3 - 4x^2 + 5x + 6$ as a polynomial of $(x + 1)$.
- (f) Find the value of i^i .
- (g) Form the equation whose roots are 8 and 9.
- (h) If $A = \begin{pmatrix} 2 & -1 \\ 1 & 3 \end{pmatrix}$ then evaluate $A^2 - 5A$.
- (i) Find the nature of the conic $3x^2 + 2xy + 3y^2 - 16x + 20 = 0$
- (j) State the Descartes's rule of signs.
- (k) Find $(\vec{i} + 2\vec{j} + 3\vec{k}) \times (2\vec{i} + \vec{j} - \vec{k})$
- (l) If $|\vec{A} + \vec{B}| = 60, |\vec{A} - \vec{B}| = 40$ and $|\vec{B}| = 46$ then find the value of $|\vec{A}|$.

(m) Find the value of determinant $\begin{vmatrix} 265 & 240 & 219 \\ 240 & 225 & 198 \\ 219 & 198 & 181 \end{vmatrix}$.

(n) If $x + \frac{1}{x} = 2 \cos \frac{\pi}{7}$ then find the value of $x^7 + \frac{1}{x^7}$.

(o) Find the set of vectors (1, 2, 3), (2, -1, 4) and (-1, 8, 1).

Group-C

3. Answer *any four* questions:

5×4=20

(a) Show that the function $f : R \rightarrow R$ defined by $f(x) = x^3 + x$ is bijective, where R is the set of real numbers.

(b) Prove that $\begin{vmatrix} -2a & a+b & a+c \\ b+a & -2b & b+c \\ c+a & c+b & -2c \end{vmatrix} = 4(a+b)(b+c)(c+a)$

(c) Solve by Cramer's rule: $x + 2y + 3z = 6, 2x + 4y + z = 7, 3x + 2y + 9z = 14$.

(d) If $A = \begin{pmatrix} 1 & -1 & 1 \\ 2 & -1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$ then find A^2 and show that $A^2 = A^{-1}$.

(e) Solve by matrix method, the equations $x + y + z = 8, x - y + 2z = 6, 3x + 5y - 7z = 14$.

(f) Show that the mapping $f : Q \rightarrow Q$ defined by $f(x) = 3x + 2$ is one-one onto, where Q is the set of rational numbers. Also find a formula for f^{-1} .

Group-D

4. Answer *any three* questions:

10×3=30

(a) (i) Define Ring. Explain the property of ring.

(ii) Prove that A field is an integral domain.

(b) (i) If α, β, γ be the roots of the equation $x^3 - px^2 + qx - r = 0$, then form the equation whose roots are $\beta\gamma + \frac{1}{\alpha}, \gamma\alpha + \frac{1}{\beta}, \alpha\beta + \frac{1}{\gamma}$.

(ii) Solve $x^3 - 18x - 35 = 0$ by Cardan's method.

(c) Show that a triangle the perpendiculars drawn from the vertices to the opposite sides are concurrent.

(d) Find the general equation of a parabola.

(e) Find the equations of the tangents to the conic $x^2 + 4xy + 3y^2 - 5x - 6y + 3 = 0$ which are parallel to the straight line $x + 4y = 0$.

(f) Find the nature of the conic $\frac{l}{r} = 1 + e \cos \theta$.

BCA-I/BCA-ENG/AECC-1/19

BCA 1st Semester (Honours) Examination, 2019-20 (CBCS)**BACHELOR OF COMPUTER APPLICATION****Course ID :****Course Code : BCA-ENG/AECC-1**

Course Title : English Language and Communication

Time: 3 Hours**Full Marks: 80***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Group-A**

(Answer all the questions)

1. Select the correct alternative from the options for each question. 1×10=10
- (i) The word nearest in meaning to “oblivion” is
- | | |
|------------------------------------|---------------------------|
| (a) A state of forgetfulness | (b) A state of pleasure |
| (c) A state of recalling past life | (d) A state of bitterness |
| (e) None of these | |
- (ii) Select the correct indirect speech of the following:
- Bimal said to me, “Go out from my room”.
- | |
|---|
| (a) Bimal asked me if I go out from my room. |
| (b) Bimal said to go out from my room. |
| (c) Bimal told me go out from my room. |
| (d) Bimal ordered me to go out from his room. |
| (e) None of the above |
- (iii) The antonym of “Hard” is
- | | |
|-------------------|----------|
| (a) strong | (b) weak |
| (c) tough | (d) soft |
| (e) None of these | |
- (iv) The full form of LSRW is
- | | |
|--|----------------------------------|
| (a) Link System Reading Work | (b) Logical System Research Work |
| (c) Listening Speaking Reading Writing | (d) Log Search Right Wing |
| (e) None of these | |
- (v) Decoding means
- | | |
|---------------------------------|------------|
| (a) Interpret and Understanding | (b) Debate |
| (c) Quarrel | (d) Divide |
| (e) None of these | |

- (vi) Non-verbal communication is of much advantage specially to
- (a) educated persons
 - (b) illiterate persons
 - (c) clever persons
 - (d) deaf and dumb persons
 - (e) None of these
- (vii) Grape vine is a kind of _____ Communication. Fill in the blank with the correct alternative from
- (a) formal
 - (b) informal
 - (c) common
 - (d) Non-verbal
 - (e) None of these
- (viii) Upward and downward flow of message is called
- (a) horizontal communication
 - (b) vertical communication
 - (c) diagonal communication
 - (d) All of these
 - (e) None of these
- (ix) Feed back is the _____ stage of a communication process.
- Fill in the blank with the suitable item
- (a) first
 - (b) second
 - (c) final
 - (d) initial
 - (e) None of these
- (x) The necklace was insured, _____?
- Select the correct question tag to the sentence
- (a) was it
 - (b) was it not
 - (c) wasn't it
 - (d) is it
 - (e) None of these

Group-B

2. Answer *any ten* questions:

2×10=20

- (a) Name some business letters.
- (b) What is encoding?
- (c) Name some of the modern modes of communication.
- (d) Use the word "Right" both as a Noun and a Verb.
- (e) Give some examples of oral communication.
- (f) Explain the word "Report".
- (g) Write a short note on "Memo".
- (h) Why is English called a non-phonetic language?

- (i) Explain “Diphthong” with examples.
- (j) What is the difference between “listening” and “hearing”?
- (k) Is group discussion same as Meeting?
- (l) Give one word for the expression “That which is contrary to law”.
- (m) “He has failed in the English” — correct the error in the sentence.
- (n) Make the sentence passive: How did you answer the question?
- (o) There is _____ university _____ Bankura. Fill in the blank with an article and a preposition.
- (p) Drinking is harmful to health Replace the underlined expression with a phrasal verb.
- (q) Combine the sentences into a simple sentence: I saw the snake. I jumped out in fear.

Group-C

3. Answer *any four* questions: 5×4=20
- (a) Explain communication with examples.
 - (b) What purpose does group discussion serve to an employer?
 - (c) Explain when our communication is not successful.
 - (d) What is the importance of advertisement in business?
 - (e) Write a note on “Grape Vine”.
 - (f) Explain “Message” and “Medium”.

Group-D

4. Answer *any three* questions: 3×10=30
- (a) Change the following words, by using phonetic symbols and put the correct stress mark: teacher, tiger, views, song, combination.

Or,

Write the following words in normal spelling, putting the correct stress marks:

∫ U: † elbl Өl ʒK Ōat a : m

- (b) Change the following sentences as directed:
 - (i) Rahim is the tallest boy in our class (Use positive degree)
 - (ii) He is too weak to walk. (Make it complex)
 - (iii) As you are sincere, I like you, (Make it simple)
 - (iv) Can India’s glory ever fade? (Avoid question)
 - (v) Only the graduates are allowed. (Make it Negative)
- (c) Put the correct punctuation marks and rewrite the passage: at last i met mr r m halder the principal of dadar school for the blind and humbly said to him sir would you please admit my blind girl into your school on certainly why not thank you sir andi shall be evergrateful to you.

- (d) (i) Write a letter to the principal of your college, requesting leave for two weeks, as advised bed rest by the doctor for jaundice.

Or,

- (ii) A letter to the Editor of a newspaper about high prices of things.
- (e) Write short notes on:
- (i) Seminar
- (ii) Multimedia
- (f) Make a precis of the following passage, adding an appropriate title:

There are several distinct dimensions in which our youth must equip itself. The first is the physical. Building a great democracy and defending it from aggressors requires a young generation that is physically strong. With muscles of iron and nerves of steel and for this it must equip itself by undertaking physical training and developing physical fitness to maximum extent possible.

The second dimension is the intellectual field. We live in a highly competitive age of science and technology and can no longer afford the luxury of mediocrity if we are to forge ahead. Therefore, every young man and woman studying in schools, colleges or universities must aim at academic ability of the highest order. The third is the dimension of patriotism. I am concerned here not so much with the routine meaning of this term as with the deeper patriotism which transcends all pettiness and creates in our youth a deep urge for national unity and progress.

BCA 1st Semester (Honours) Examination, 2019-20**BACHELOR OF COMPUTER APPLICATION****Course ID :****Course Code : BCA-102**

Course Title: Programming in C

Time: 4 Hours**Full Marks: 80***The figures in the margin indicate full marks.**The questions are of equal value.***Group-A****1. Answer all questions:****1×10=10**

- (i) The keyword used to transfer control from a function back to the calling function is
- | | |
|-------------------|-------------|
| (a) switch | (b) goto |
| (c) return | (d) go back |
| (e) None of these | |
- (ii) Which of the following function set first n characters of a string to a given character?
- | | |
|-------------------|-------------|
| (a) strinit | (b) strnset |
| (c) strset | (d) strcset |
| (e) None of these | |
- (iii) If two strings are identical then strcmp () function return
- | | |
|-------------------|---------|
| (a) -1 | (b) 1 |
| (c) 0 | (d) Yes |
| (e) None of these | |
- (iv) Which of the following function is used to find the first occurrence of a given string in another string?
- | | |
|-------------------|----------------|
| (a) strchr () | (b) strrchr () |
| (c) strstr () | (d) strnset () |
| (e) None of these | |
- (v) What is (void *) 0?
- | | |
|------------------------------------|------------------------------------|
| (a) Representation of NULL pointer | (b) Representation of void pointer |
| (c) Error | (d) No Error |
| (e) None of these | |
- (vi) Char * p;
p = (char *) malloc (100);
The above statements can be rewritten as —
- | |
|--|
| (a) char p = * malloc (100); |
| (b) char *p = (char) malloc (100); |
| (c) char *p = (char*) malloc (100); |
| (d) char *p = (char*) (malloc*) (100); |
| (e) None of the above |

(vii) In which header file is the NULL macro defined?

- (a) `stdio.h`
- (b) `stddet.h`
- (c) `stdio.h & stddet.h`
- (d) `math.h`
- (e) None of these

(viii) What does the following declaration mean?

```
int (*ptr) [10];
```

- (a) ptr is array of pointers to 10 integers
- (b) ptr is pointer to an array of 10 integers
- (c) ptr is an array of 10 integers
- (d) ptr is a pointer to an array
- (e) None of these

(ix) Which of the following operations can be performed on the file "Notes.txt" using the below code.

```
File * FP;  
FP = Fopen ("Notes.txt", "r");
```

- (a) Reading
- (b) Writing
- (c) Appending
- (d) Read and Write
- (e) None of these

(x) Which of the following statement execution results a jump to the beginning of a loop from point of execution?

- (a) `break`
- (b) `continue`
- (c) `jump`
- (d) All of these
- (e) None of these

Group-B

2. Answer *any ten* questions:

2×10=20

- (a) What is pre-processor macro?
- (b) What do you mean by typecasting?
- (c) Write difference between 'while' and 'do-while' loop.
- (d) What is L value and r value?
- (e) What is variable?
- (f) What are enumerations?
- (g) Write differences between structure and union.
- (h) Write difference between `++a`; and `a++`;
- (i) Why is default statement used in switch case in C?
- (j) Explain the syntax of for loop.

- (k) What is static variable?
- (l) What is nested loop?
- (m) What is an endless loop?
- (n) What is the difference between malloc () and calloc () functions?

Group-C

3. Answer *any four* from following: 5×4=20
- (a) Write a C program to add sum of digits of a number.
 - (b) Write a program in C to find out *n*-th Fibonacci number.
 - (c) What is NULL pointer? When do you use it? 2+3=5
 - (d) Why is it necessary to give the size of an array in its declaration? What is dynamic memory allocation? 2½+2½=5
 - (e) Why C is called middle level language? Write its advantages and disadvantages. 2+3=5
 - (f) What is array of pointer. Differentiate between linkar and linkase. 2½+2½=5

Group-D

4. Answer *any three* questions: 10×3=30
- (a) Write a C-program in C to implement a gradation system in school.
 - (b) What is static memory allocation? What is the purpose of realloc ()? Are the expressions arr and θarr same for an array of integers. 3+4+3=10
 - (c) Discuss about different storage classes in C.
 - (d) Write short note on (*Any two*): 5×2=10
 - (i) Strcat ()
 - (ii) File
 - (iii) Free ()
-

BCA-I/BCA-CC-01(lab)/19

BCA 1st Semester (Honours) Examination, 2019-20 (CBCS)

BACHELOR OF COMPUTER APPLICATION

Course ID : 13521

Course Code : BCA-CC-01

Course Title : Computer Fundamentals and PC Software (Lab)

Time: 2 Hours

Full Marks: 30

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group-A

(Answer *any one* of the following)

15×1=15

1. Create a presentation for a teacher to present in his class about computer generations. The presentation should contain 5 slides, one for each generation.
2. Create a presentation to represent various input device of a computer [use 5 slides].
3. Create a presentation to introduce your city or village [use 5 slides].
4. Using MS-Word create a document on features of MS-Windows.
5. Using MS-Excel prepare a result format.

Group-B

(Answer *any one* of the following)

15×1=15

1. Create a 5 slide presentation on 'Save tree Save earth'.
 2. Created a 5 slide presentation on 'Save drive Save life'.
 3. Created a 5 slide presentation about yourself.
 4. Create a pie chart in MS-Excel to display the rainfall data of Bankura 2017.
 5. Create a 5 slide presentation about your college.
-

BCA 1st Semester (Honours) Examination, 2019-20 (CBCS)**BACHELOR OF COMPUTER APPLICATION****Course ID : 13522****Course Code : BCA-CC-02**

Course Title : Introduction to C Programming (Lab)

Time: 2 Hours**Full Marks: 30***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Group-A**

(Answer any one experiment from the following)

15×1=15

1. Write a program to find the minimum and maximum of an array.
2. Calculate the sum $s = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} \dots + \frac{x^n}{n!}$ for x is real and n is integer.
3. Write a C program to check whether a given string is palindrome or not.
4. Write a C program to print the Pascal's triangle.

```

      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1

```

5. Write a program in C to check a given no. is armstrong or not.

Group-B

(Answer any one experiment from the following)

15×1=15

1. Write a C program to find the sum of an integer and its reverse for example if the given integer is 213 then the reverse 312 and the sum is $213 + 312 = 525$.
2. Write a C program to add two matrices.
3. Write a C program to find the power of a number using recursion.
4. Write a program to check whether an integer is a perfect number or not (perfect number is a number where the sum of its proper factor is equal to the number itself. For example the proper factors of 28 are 2, 14, 4, 7 and the sum is $2 + 14 + 4 + 7 + 1 = 28$).
5. Write a C program to swap two numbers using pointers.