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**BCA SEM I**

**19-20**

**Question Papers**

6 NOV 2019

Examination: **Shree Sateri Pissani Education Society's**

**Shree Gopal Gaonkar Memorial**

**Goa Multi Faculty College, Dharbandora - Goa**

**Semester End Examination-I,** (CNABE)

**Class: F.Y.BCA**

**Semester: I**

**Sub: Basic Mathematics**

**Duration: 2 hour**

**Max Marks: 50**

**Instructions: 1) All Questions are Compulsory.**

**2) Figures to right indicate marks.**

**3) Start each new question on a fresh page.**

**4) Programmable calculators are not allowed.**

(5x1=5)

**Q.1 A) Answer the following**

i. If  $A=(2,3)$  and  $B=(6,1)$  then mid-point of AB is \_\_\_\_\_

ii.  $\lim_{x \rightarrow 1} e^x =$  \_\_\_\_\_

iii. If  $y = \log x$  then  $y' =$  \_\_\_\_\_

iv. For 10, 2, -6, -14, ..... what is the value of a and d?

v. The conjugate of  $5+2i =$  \_\_\_\_\_



(5x1=5)

**B) Answer the following**

i. Area of Rectangle = \_\_\_\_\_

ii. The  $n^{\text{th}}$  of first n term of an A.P = \_\_\_\_\_

iii. If  $A = \begin{bmatrix} 0 & 2 \end{bmatrix}$  then the order of matrix = \_\_\_\_\_

iv.  $\int \frac{1}{x} dx =$  \_\_\_\_\_

v. A line has slope 5 and y-intercept is then the equation of a line is \_\_\_\_\_



28 OCT 2019

Roll No:

Total no. of Questions: 06

Examination

Total No: of pages: 02

**F.Y.B.C.A Semester End Examination**

PROBLEM SOLVING & PROGRAMMING CONCEPTS (BCA101)

Semester : I

Duration: 2 hours

Maximum Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.

1. Answer the following:

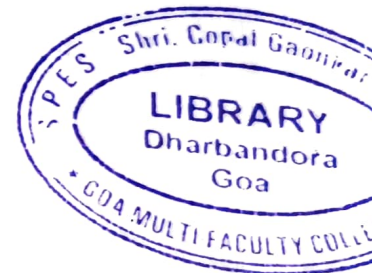
A. Identify the odd one among the following options and give one valid reason to support your answer: [5 x 1 Marks]

1. Continue, break, exit
2. For, while, do-while
3. >=, <=, =
4. Int, float, char
5. Strlen, strcpy, strcat

B. Answer the following:

[5 x 1 Marks]

- a. Which keyword terminates the loop and passes the control to the next instruction after the loop?
- b. Which keyword helps to rename data types in C?
- c. Which file mode allows to read, edit and write to a file in C?
- d. Which function converts strings to uppercase?
- e. What value is returned by this function: `int add(int x,int y);` ?



2. Answer the following:

- a. Name and explain the data types in C with examples.
- b. Write a note on user defined functions.
- c. Write an algorithm to compare three numbers taken as input.

[2 Marks]

[3 Marks]

[5 Marks]

OR

d. Show how data can be copied from one file to another using a C program. [5 Marks]

3. Answer the following:

- a. What are enumerated Data types?
- b. Explain bit fields in C with example.
- c. Draw a flowchart to check if the given number is a palindrome or not.

[2 Marks]

[3 Marks]

[5 Marks]

OR

d. What are the various shapes used in a flowchart? Give suitable examples. [5 Marks]

4. Answer the following:
- What are the various file operations in C?
  - Differentiate between structures and unions.
  - What is an array? Show how array can be defined, initialized, input and output. Give suitable example.

[2 Marks]  
[3 Marks]  
[5 Marks]  
[5 Marks]

OR

5. Answer the following:
- What is a recursive function? Give suitable example.
  - What will be the value of x and y after executing the following instructions:

[2 Marks]  
[3 Marks]

- int x=11, y=22;
- int \*ip;
- ip=&x;
- y=\*ip;
- x=ip;
- \*ip=300;

Assume x resides at memory location 10, y at 20 and ip at 100.  
Show how the values change after each instruction.

- Rectify the errors in the following program:

[5 Marks]

```
/* this program will check odd/even number */
#include<string.h>
Void main()
{
  Int a
  Fun(a)
}
Void fun( a);
{
  a/2=0?"odd":"even";
}
```

OR

- Write a note on generations of computers.
6. Answer the following:

[5 Marks]

- What is an error? Define debugging.
- Write a note on memory management in C.
- What is a pointer? Show how pointers can be defined, initialized and used. Give suitable example.

[2 Marks]  
[3 Marks]  
[5 Marks]

OR

- Enlist the advantages and disadvantages of algorithms.

[5 Marks]

28 OCT 2019

**Examination**

Repeat  
NCBCS

Roll No:

Total no. of Questions: 05

Total No: of pages: 02

**F.Y.B.C.A Semester End Examination**

PROBLEM SOLVING & PROGRAMMING CONCEPTS (BCA101)

Semester: I

Duration: 2 hours

Maximum Marks: 50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.

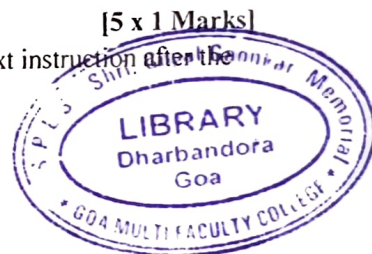
1. Answer the following:

A. Identify the odd one among the following options and give one valid reason to support your answer: [5 x 1 Marks]

1. Continue, break, exit
2. For, while, do-while
3. >=, <=, =
4. Int, float, char
5. Strlen, strcpy, strcat

B. Answer the following:

- a. Which keyword terminates the loop and passes the control to the next instruction after the loop? [5 x 1 Marks]
- b. Which keyword helps to rename data types in C?
- c. Which file mode allows to read, edit and write to a file in C?
- d. Which function converts strings to uppercase?
- e. What value is returned by this function: `int add(int x, int y);` ?



2. Answer the following:

- a. Name and explain the data types in C with examples. [2 Marks]
- b. Write a note on user defined functions. [3 Marks]
- c. Write an algorithm to compare three numbers taken as input. [5 Marks]

3. Answer the following:

- a. What are enumerated Data types? [2 Marks]
- b. Explain bit fields in C with example. [3 Marks]
- c. What are the various shapes used in a flowchart? Give suitable examples. [5 Marks]

4. Answer the following:

- a. Write a note on documentation. How comments can be incorporated in a C program? Give suitable examples. [2 Marks]

b. What will be the output of the following instructions:

```
#include<stdio.h>
void fun(int a);
int main()
{
int a;
fun(a);
}
void fun(int a)
{
a%2==0?printf("odd");printf("even");
}
```

[3 Marks]

c. Demonstrate the use of nested if-else using suitable example.

[5 Marks]

5. Answer the following:

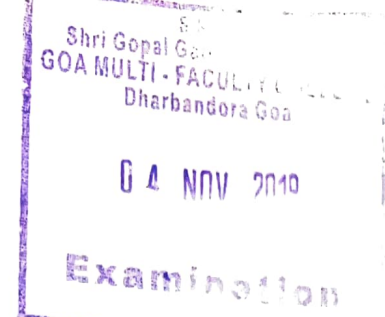
- a. What is a constant? How and where it is used?
- b. Explain the scope of a variable in C with example.
- c. Write a note on generations of programming languages.

[2 Marks]

[3 Marks]

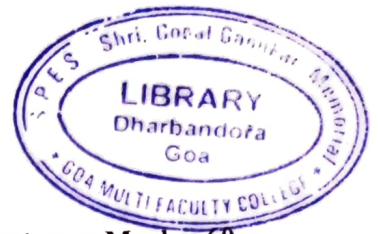
[5 Marks]

Roll No:



Total No. of Questions: 6  
Total No. of pages: 2

**BCA Semester End Examination**  
**BASIC MATHEMATICS 104**  
**Semester I**



Duration: 2Hrs.

Maximum Marks: 60

- Instructions:** i) Questions 1-6 are compulsory  
ii) Figures to right indicate full marks.

**Q1 A] Fill in the blanks:**

(5×1=5)

- (a) The greatest common divisor of 37 & 249 is \_\_\_\_\_.  
(b) Area of circle of radius 5cm is given by \_\_\_\_\_  $\text{cm}^2$ .  
(c) If  $B = \begin{bmatrix} 3 & 4 & 5 \end{bmatrix}$  then the order of matrix is \_\_\_\_\_.  
(d) If a,b,c are in arithmetic progression, then  $b =$  \_\_\_\_\_.  
(e) The magnitude of unit vector is \_\_\_\_\_.

**B] Fill in the blanks:**

(5×1=5)

- (a) Area of square having side 2.5cm is \_\_\_\_\_.  
(b) The sum of the first term of a G.P for  $|r| < 1$  is \_\_\_\_\_.  
(c) If  $\sin \theta = \frac{5}{12}$ , then  $\operatorname{cosec} \theta$  is \_\_\_\_\_.  
(d) The equation of line parallel to the Y-axis and passing through (4,0) is \_\_\_\_\_.  
(e) The vectors  $\vec{a}_1$  &  $\vec{a}_2$  are perpendicular to each other iff \_\_\_\_\_.

**Q2] Answer the following:**

- A. Let x & y be two numbers in the ratio 1:2. If 6 is added to both the numbers then ratio becomes 3:4. Find the number. (2)  
B. A right circular cone has slant height equal to 3 times radius of the base. If the curved surface area of cone is  $18.48\text{m}^2$ . Find the radius of base. (3)  
C. Find the inverse of the matrix  $A = \begin{bmatrix} 1 & -3 & 2 \\ 2 & 5 & -1 \\ 3 & 1 & 4 \end{bmatrix}$  (5)

OR

- D. Solve the following equations using cramer's rule. (5)  
$$\begin{aligned} x + 2y - z &= 3 \\ 3x - y + 2z &= 1 \\ 2x - 2y + 3z &= 2 \end{aligned}$$

**Q3] Answer the following questions:**

- A. If  $A = \begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix}$  find the matrix X such as that  $A-2X = \begin{bmatrix} 1 & 8 \\ 7 & -6 \end{bmatrix}$ . (2)  
B. For the A.P 2,4,6,8 ..... find  $T_7$  and  $S_7$ . (3)  
C. Use De moivre's theorem to prove the following (5)  
 $\sin 2\theta = 2\sin \theta \cos \theta$  &

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

OR

D. Find the fourth root of complex number  $Z = 1 + i\sqrt{3}$ . (5)

**Q4] Answer the following questions.**

A. Let  $Z_1 = -1 + 3i$  &  $Z_2 = 2 + 3i$ . Verify that  $Z_1 Z_2 = Z_2 Z_1$ . (2)

B. Find the volume and the surface area of the sphere of radius 6.3cm. (3)

C. Examine the continuity of the function  $f$  at  $x = 3$ . (5)

$$F(x) = \begin{cases} x^2 + 1, & 0 \leq x < 3 \\ 3x + 1, & 3 \leq x \leq 6 \end{cases}$$

OR

D. Evaluate the limit  $\lim_{x \rightarrow 2} \frac{x^5 - 32}{x^2 - 4}$  (5)

**Q5] Answer the following questions:**

A. Let  $f(x) = x^2 + 2$  &  $g(x) = \log x$  find  $(f \circ g)(x)$ . (2)

B. Using trigonometry prove that  $\frac{\tan^2 \theta + 1}{\sec^2 \theta - 1} = \operatorname{cosec}^2 \theta$ . (3)

C. Simplify  $[1 - \{1 - (1 - a^2)^{-1}\}^{-1}]^{-\frac{1}{2}}$ . (5)

OR

D. If  $a^2 + b^2 = 7ab$  prove that  $[\log_{\frac{1}{3}}(a+b) = \frac{1}{2}(\log a + \log b)]$  (5)

**Q6] Answer the following:**

A. Solve the following equation and also state the nature of the roots of the equation  $5x^2 + 6x + 1 = 0$  (2)

B. Find a unit vector perpendicular to both the vectors  $\vec{a} = 4\hat{i} - \hat{j} + 3\hat{k}$  and  $\vec{b} = -2\hat{i} + \hat{j} - 2\hat{k}$ . (3)

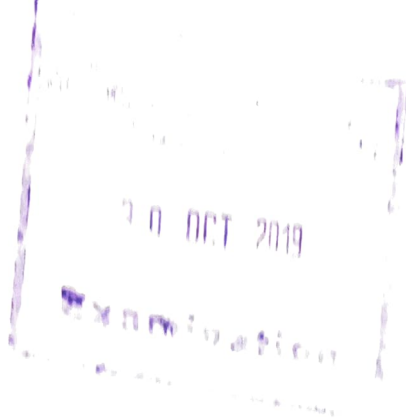
C. Find the equation of line through (7,-3) and parallel to the line through (-1,2) and (5,11). (5)

OR

D. In what ratio does the point (4,-2) divide the segment from (-1,8) to (13,-20). (5)



Roll No:



Total No: of Questions :05

Total No: of pages: 03

F.Y.B.C.A Semester End Examination (NCBCS)

Computer Organisation and Architecture (BCA 102)

Semester: I

Duration: 2Hours.

Maximum Marks: 50

*Instructions:*

- 1) Question 1- 5 are compulsory
- 2) Figures to the right indicate maximum marks allotted
- 3) Start each new question on a fresh page
- 4) Enter the appropriate main and sub-question numbers in the answer book

Q1.A) Complete the following statement by using appropriate word(s): [5\*1]Marks

- i. \_\_\_\_\_ is a plug-and-play interface between a computer and add-on devices (such as mouse, scanners, and printers).
- ii. \_\_\_\_\_ flag indicates an overflow condition for arithmetic operations.
- iii. By adding 1 to the Least Significant bit of 1's complement \_\_\_\_\_ of binary number is obtained.
- iv. To ensure the actions and the operations of the CPU are synchronised \_\_\_\_\_ is used in control unit.
- v. \_\_\_\_\_ languages are also called as High-level languages.

Q1.B) Answer The Following Questions Briefly.

[5\*1]Marks

- i. Mention ANY ONE category of Micro Operations.
- ii. Give a point of difference between Register Direct and Register Indirect addressing mode.
- iii. Define the term Cache Mapping.
- iv. List ANY ONE characteristic of Pentium III generation computers.



- v. Give one suitable reason to justify why Micro-Programmed control unit is better than Hardwired Control Unit.

[10Marks]

**Q2) Answer The Following Questions.**

2Marks

- A. Enlist ANY TWO major functions of CPU. 3Marks
- B. Explain the following types of addressing modes with the help of an example. 3Marks
- Direct.
  - Indirect.
- C. Draw and explain the working of external device block diagram with the necessary components details. 5Marks

OR

- D. Draw a neat labelled block diagram of DMA controller explaining the functionalities of the components. 5Marks

**Q3) Answer The Following Questions.**

[10Marks]

- A. List ANY TWO elements of a Machine instruction. 2Marks
- B. Briefly explain the following CPU registers: 3Marks
- Program Counter.
  - Instruction Buffer Register.
  - Memory Address Register.
- C. Write a short note on Raid levels 1 and 2 with suitable diagrams to support your answer. 5Marks

OR

- D. Explain the 3 level cache organisation with suitable diagram. 5Marks

**Q4) Answer The Following Questions**

[10Marks]

- A. Differentiate between Programmed I/O and Interrupt driven I/O. 2Marks
- B. Explain ANY TWO 8086 data transfer with appropriate examples. 3Marks
- C. Draw a neat labelled block diagram of Control Unit. 5Marks

OR

- D. Write a short note on following types of Microprogramming. 5Marks
- Horizontal
  - Vertical

P.T.O.

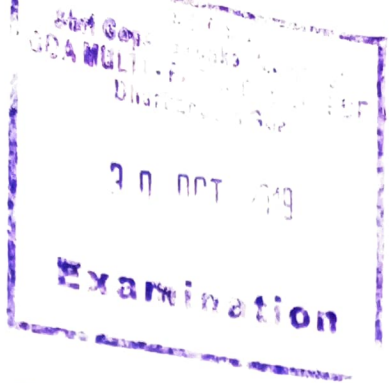
Q5) Answer The Following Questions

- A. State and explain the 2 steps involved in Instruction Cycle mechanism. [10Marks]  
2Marks
- B. List and explain ANY THREE the different types of ROM. 3Marks
- C. Perform Binary Arithmetic Operation using Two's Complement form. 5Marks
- a)  $(-9)+(4)$
  - b)  $(-7)+(5)$

**OR**

- D. Perform the following Conversions 5Marks
- a) Convert the following  $(125)_{10}$  decimal to binary
  - b) Convert the following  $(11011001)_2$  to decimal

Roll No:



Total No: of Questions :06

Total No: of pages: 03

## F.Y.B.C.A Semester End Examination

### Computer Organisation and Architecture (BCA102)

Semester: I

Duration: 2Hours.

Maximum Marks: 60

- 1) Question 1- 6 are compulsory
- 2) Figures to the right indicate maximum marks allotted
- 3) Start each new question on a fresh page
- 4) Enter the appropriate main and sub-question numbers in the answer book

Q1.A) Complete the statement by using appropriate word(s): [5\*1]Marks

- i. In \_\_\_\_\_ I/O technique, the I/O module and main memory exchange data directly without processor involvement.
- ii. Data are distributed across physical drives in a RAID scheme known as \_\_\_\_\_.
- iii. \_\_\_\_\_ Contains the address of the next instruction-pair to be fetched from memory.
- iv. An \_\_\_\_\_ is a low-level programming language for microprocessors and other programmable devices.
- v. On a \_\_\_\_\_ shift, the sign bit is replicated into the bit position to its right.

Q1.B) Answer The Following Questions Briefly [5\*1]Marks

- i. Define the term Cache Mapping.
- ii. Name ANY TWO basic functional elements of the processor.
- iii. Outline the major difference between the concept of Direct and Indirect addressing modes.
- iv. Mention ANY ONE characteristic of Third Generation of computers.
- v. List the two basic tasks performed by control unit.



[10]Marks

Q2) Answer The Following Questions.

2Marks

- A. List ANY TWO features of Pentium IV. 3Marks
- B. Compare and contrast between Horizontal and Vertical Microprogramming. 3Marks
- C. Draw the flowchart for Interrupt Driven I/O technique and explain with respect to processor and I/O module. 5Marks

OR

D. Draw the block diagram of DMA module and explain it briefly.

5Marks

Q3) Answer The Following Questions.

[10Marks]

- A. State the function of Control and Status commands. 2Marks
- B. Explain the Single bus, Integrated DMA Controller configuration. 3Marks
- C. Write a short note on the following types of DRAM technologies. 5Marks
- a) DDR-SDRAM
- b) SDRAM

OR

D. Write a short note on Raid levels 5 and 6 with suitable diagrams to support your answer. 5Marks

Q4) Answer The Following Questions.

[10Marks]

- A. What are Logical Instructions in 8086? List any 2 Logical Instructions. 2Marks
- B. State and briefly explain ANY THREE physical characteristics of magnetic disks. 3Marks
- C. Enlist and explain the 2 major steps involved in Instruction Cycle with suitable diagram. 5Marks

OR

D. Explain the Bus Interconnection Scheme stating the functionality of the following types of buses. 5Marks

a) Address bus

b) Data bus

P.T.O.

**Q5) Answer The Following Questions.**

**[10Marks]**

- A. Give a brief introduction of Von-Neumann Machine. 2Marks
- B. Explain Immediate Addressing Mode with suitable examples and diagram. 3Marks
- C. With diagram explain the model of Control Unit 5Marks

**OR**

- D. With the help of suitable diagram explain the model of the Micro programmed Control Unit . 5Marks

**Q6) Answer The Following Questions.**

**[10Marks]**

- A. Give an example of Arithmetic and Logical right shift operation. 2Marks
- B. Illustrate the following Data Transfer Instructions with the help of example: 3Marks
- a) MOV
- b) POP
- C. Perform Binary Arithmetic Operation using Two's Complement form. 5Marks
- a)  $(-4)+(-1)$
- b)  $(+5)+(-7)$

**OR**

- D. Perform the following Conversions 5Marks

- a) Convert the following  $(1111100)_2$  to hexadecimal.
- b) Convert the following decimal number  $(81)_{10}$  to binary.

\*\*\*\*\*END\*\*\*\*\*

