

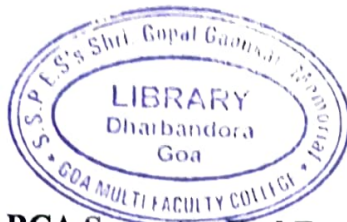
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**BCA SEM II**

**16-17**

**Question Papers**



Roll No: \_\_\_\_\_

Total No. of Questions: 05

Total No. of pages: 03

### BCA Semester End Examination

#### Data Structures (BCA 201)

Semester No: II

Duration: 02 Hrs.

Maximum Marks: 50

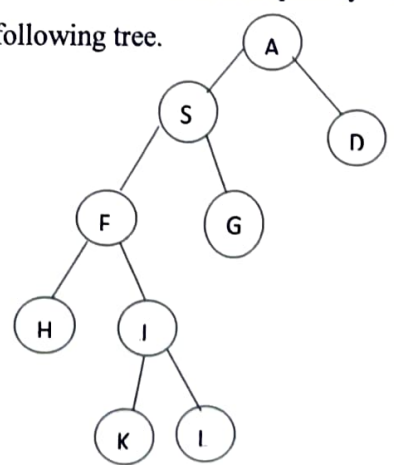
- Instructions:**
1. Figures to the right indicate maximum marks.
  2. Provide sufficient margin space in the answer-book for recording marks.
  3. Enter the appropriate main & sub-question numbers in the answer-book

**Q.1 A) Complete the following statements by using appropriate word(s).** (5x1=5)

1. Binary search is based on \_\_\_\_\_ approach.
2. \_\_\_\_\_ binary tree is an incomplete binary tree having nonempty left and right subtree.
3. The \_\_\_\_\_ of the binary tree is the maximum level of any leaf in the tree.
4. A graph is \_\_\_\_\_ if one can reach any vertex from any other vertex by following edges in either direction.
5. If degree of a node is zero, then the node is called an \_\_\_\_\_ node.

**Q.1. B) Answer the following.** (5x1=5)

1. Define Big Omega informally.
2. What do you mean by a Spanning Tree?
3. State any one advantage and disadvantage of Linear Search.
4. If there are 11 memory slots, which slot would be occupied by a record with key 230?
5. State the DSF and BSF of the following tree.



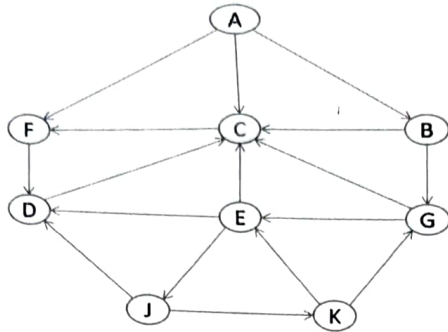
**Q.2. Answer the following:**

A. Explain the term weighted graph with example. (02)

P.T.O.

B. Compare Queues with Arrays data structure.

X. Write down the Adjacency List for the following graph.



OR

Y. Write a short note on Linked List.

**Q.3. Answer the following:**

A. What is the Prefix expressions for the following:

$$(P + Q * R) \$ (D / E / (F * G))$$

B. State the characteristics of Binary Search Tree.

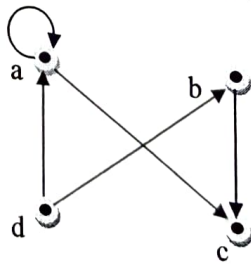
X. Write a short note on Stack data structures.

OR

Y. Write a short note on Dynamic Memory Allocation.

**Q.4. Answer the following:**

A. Draw an adjacency matrix  $A_{2ij}$  for the following directed graph.



B. Define B Tree.

(05)

X. Create a Maximum Heap for the following set of numbers.

10 40 20 15 60 45 5

OR

(05)

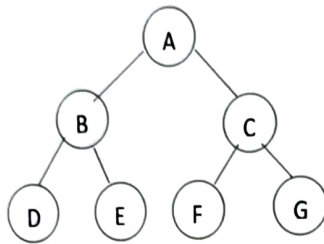
Y. Sort the given set of numbers using shell sort technique.

22 46 10 3 48 43 20 1

Q.5. Answer the following:

(02)

A. Perform Left and Right Rotation on the following balanced tree.



B. Construct an expression tree using stack with the following data.

(03)

$A + (B - C) \$ (E * F)$

X. Explain the procedure of finding a minimum spanning tree using Kruskal's algorithm.

(05)

OR

Y. Write a short note on Chained Addressing in hashing with example.

(05)

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Roll No: \_\_\_\_\_

**Total No: of Questions: 5**

**Total No: of pages: 2**

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

**Operating System (BCA 202)**

**Semester II**

Duration: 2 Hrs.

Maximum Marks: 50

- Instructions:** 1. Figure to the Right Indicates Full marks  
2. Draw neat diagram wherever necessary with pencil

**Q1.A Select the appropriate option and rewrite the statement**

**(5\*1=5)**

i) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called \_\_\_\_\_

- a) Job Queue   b) Ready Queue   c) Execution Queue   d) Process Queue

ii) Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?

- a) First come, First serve Scheduling                      b) Shortest Job Scheduling  
c) Priority Scheduling    d) None of the above

iii) Physical memory is broken into fixed size block called \_\_\_\_\_

- a) Frames   b) Pages   c) Backing Store   d) None

iv) CPU fetches the instruction from memory according to the value of

- a) Program Counter   b) Status Register   c) Instruction Register   d) Program status word

v) Memory Management provide protection by using two registers, Base Register and Limit Registers

- a) True   b) False

**Q1.B Answer the following**

**(5\*1)**

- i) Define Operating Systems  
ii) List types of Fragmentation  
iii) Define Deadlock  
iv) PCB stands for \_\_\_\_\_  
v) Define Threading

**Q2 Answer the following**

**(10)**

A) Define Process management?

**(2)**

- B) Explain process to process switching (3)  
X) Explain Paging and Segmentation (5)

OR

- Y) Explain Operating System Security and Type of Threats (5)  
**Q3) Answer the following (10)**

- A) Difference between Windows and Linux Operating System (2)  
B) Explain Features and Function of Operating System (3)  
X) Explain Condition for Deadlock (5)

OR

- Y) Explain How you avoid deadlock (5)  
**Q4) Answer the Following (10)**

- A) Define RAID (2)  
B) Explain File System and working of I/O Management (3)  
X) Explain Interprocess Communication (5)

OR

- Y) Explain Distributed and Web Based Operating system (5)  
**Q5) Answer the following (10)**

- A) Define Fragmentation (2)  
B) What are the benefits of a distributed File System compared with File System in Centralized System (3)  
X) Explain memory management and Swapping (5)

OR

- Y) Write Short Note on a) Process Scheduling b) Virtual memory (5)
-



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Roll No:

Total No: of Questions: 5

Total No: of pages: 1

## FY.BCA Semester End Examination

Cost Accounting  
Semester: II

Duration: 2 Hrs.

Maximum Marks: 50

**Instructions:**

- 1) All questions are compulsory
- 2) Figures to the right indicate maximum marks.
- 3) Start each new question in a fresh page.

Q1. Following was the expenditure on a contract for Rs.600000 commenced in January, 2010 (10)

Materials Rs.120000, Wages Rs. 164400, Plant Rs.20000, Business Charges Rs.8600. Cash received on account to 31<sup>st</sup> Dec 2010 amounted to Rs.240000 being 80 % of the work certified, the value of materials in hand on 31-12-2010 was Rs.10000. Prepare the Contract account for 2010 showing the profit to be credited to the year's profit and loss account. Plant is to be depreciated at 10 %.

Q2. The product of company passes through three distinct processes to completion. They are known as A,B and C. From past experience it is ascertained that the Normal loss incurred in each process is -Process A 2%, Process B 5%, Process C 10%

In each case the percentage of loss is computed on the number of units entering the process concerned. The output of each process passes immediately to the next process and the finished units are passed from process C into stock. (10)

	Process A	Process B	Process C
Materials consumed	6000	4000	2000
Direct labour	8000	6000	3000
Manufacturing expenses	1000	1000	1500

20000 units have been issued to process A at cost of Rs.10000.  
There is no work in progress in any process. Prepare process accounts

Q3. Calculate the earnings of Worker A, B & C under Taylors Differential & Merrick plan

Normal rate per hour Rs.2.50

Standard time per unit 30 seconds

Worker A produces 1500 units, Worker B produces 1200 units & C produces 1000 units.

Q4.a) What is Cost Accounting? What are its objectives? (10=5\*2)  
b) Difference between Cost Accounting & Financial Accounting

Q.5 a) What is Time keeping & Time booking? (10=5\*2)  
b) Explain the importance of material control



Roll No:

Total No: of Questions: 5

Total No: of pages: 3

### BCA Semester End Examination

Discrete Mathematics

Semester No: II



Maximum Marks: 50

Duration: 2 Hrs.

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

2) Figures to right indicate marks.

3) Start each new question on a fresh page.

4) Non programmable calculators are allowed.

(5x1=5)

Q.1 A) Answer the following:

i.  $a^0 =$  \_\_\_\_\_

ii. The symbol for NOT gate is \_\_\_\_\_

iii. If  $X = \{ 1,2,3,4 \}$  and  $A = \{ 2,3,4 \}$  then  $A^c =$  \_\_\_\_\_

iv. How many different numbers can be form using all the digits of the number 737112?

v.  ${}^5P_5 =$  \_\_\_\_\_

(5x1=5)

B) Answer the following:

i.  ${}^nP_0 =$  \_\_\_\_\_

ii. In the expansion of  $(a + b)^n$  the  $(r + 1)^{th}$  term is given by \_\_\_\_\_

iii.  $a^m \times a^n =$  \_\_\_\_\_

iv. Define singleton set.

v. The symbol for AND gate is \_\_\_\_\_





Q.2. Answer the following:

A) i. Write down the binomial expansion of  $(x^2 - 3y)^5$ .

ii. Find n. If a)  $4({}^n P_4) = {}^n P_5$

$$b) 2({}^n P_3) = 36({}^n P_2)$$

OR

B) i. If  $f(x) = x^2 - 6x + 9$ ,  $0 \leq x \leq 4$ , find  $f(1)$ ,  $f(2)$ ,  $f(3)$ ,  $f(5)$  if they exist.  
Also find x if  $f(x) = 0$ .

ii. Show that  $(\sqrt{2} + \sqrt{1})^5 + (\sqrt{2} - \sqrt{1})^5 = 58\sqrt{2}$

Q.3. Answer the following:

A) i. Prove that  $(p \rightarrow q) \vee r \equiv [(p \vee r) \rightarrow (q \vee r)]$

ii.  $X \equiv \{1, 2, 3, 4, 5, \dots, 20\}$

$A \equiv \{1, 3, 5, 7, 8, 9, 11, 12, 13, 15, 19\}$ ,

$B \equiv \{2, 3, 4, 7, 10, 11, 13, 15, 17, 18\}$ .

Verify that a)  $(A \cup B)' = A' \cap B'$  and b)  $A - B = (A' \cup B)'$

OR

B) i. Convert  $(101010)_2$  to decimal form and convert  $(728)_{10}$  to octal form.

ii. Find  $f(g(x))$  and  $g(f(x))$  if  $f(x) = 3x - 1$ ,  $g(x) = x^2 + 1$

Q.4. Answer the following:

A) i. Convert  $(10292)_{10}$  to hexadecimal form and convert  $(100010)_2$  to decimal form.

ii. Find  $p \rightarrow (q \vee r) \leftrightarrow \sim [p \rightarrow (q \rightarrow r)]$  and state its condition.

OR

B) i. Find the 6<sup>th</sup> term of  $\left(\frac{x}{y} - \frac{y}{x}\right)^{10}$

ii. Prove that  $(\sqrt{3} + \sqrt{2})^6 + (\sqrt{3} - \sqrt{2})^6 = 970$ .

15. Answer the following:

(10)

A) i. Find a)  $(p \wedge q) \vee [\sim q \leftrightarrow p]$  and b)  $(p \rightarrow q) \rightarrow [(\sim p \rightarrow q) \rightarrow q]$

ii.  $X \equiv \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$  is the universal set,

$$A \equiv \{1, 2, 3, 4\}$$

$$B \equiv \{2, 4, 6, 8\}$$

Verify that a)  $(A \cup B)' = A' \cap B'$  b)  $(A')' = A$

OR

B) i. A class has 6 girls and 5 boys. If 4 persons out of these are to be selected, find the total number of choices if: (10)

- a) there is no restriction on gender,
- b) 3 boys and 1 girl is to be selected.

ii. If  $f(x) = 1 + x - x^2$ , find  $x$  if  $f(x + 1) = f(x + 2)$

8 7



Roll No:-----

Total no. of Questions: 1

Total No. of pages: 1

BCA Semester End Examination

Environmental Studies (BCA207)

Semester II

Duration: 1 Hrs.

Maximum Marks:25

Instructions:

1. All Questions are compulsory
2. Figures to right indicate marks
3. Start each new question on a fresh page

Q.1) Explain any five of the following in brief (05)

1. Pollution
2. Earthquake
3. HIV
4. Global warming.
5. AIDS
6. Water conservation

Q.2.A) Explain the causes and effects of nuclear hazards. (10)

OR

B) Explain the rain water harvesting methods with examples. (10)

Q.3.A.) Explain environment protection acts.(10)

OR

B.) Explain value education(10)



SHREE SATERI PISSANI EDUCATION SOCIETY'S  
GOA MULTI -FACULTY COLLEGE  
DHARBANDORA, GOA  
II Semester Examination, APRIL 2017

Class: F.Y.BCA

Sub: Environmental Studies (BCA 207)

Max marks: 25

Duration: 1 HOURS

- Instructions: 1) All questions are compulsory  
2) Figures to the right indicate maximum marks  
3) Start each new question on a fresh page.

Q.1 A) Explain any five of the following in brief

(5x1=5)

- Air pollution
- Volcanic eruption
- HIV
- Green house gases
- Nuclear waste
- Post disaster measures for flood

Q.2. A) chemical industry

(10)

OR

B) Elucidate on pollution

(10)

Q.3. A) HIV/AIDS

(10)

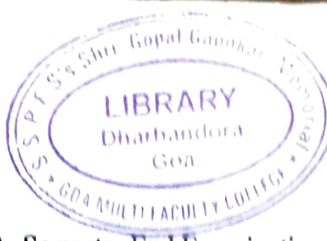
OR

B) Nuclear accidents

(10)

Roll. No.: \_\_\_\_\_

Total No. of Questions: 5



Total No. of Pages: 02

B.C.A. Semester End Examination, April 2017

**DATA STRUCTURES (BCA201)**

Duration: 2 Hours

**SEM - II**

Max. Marks: 50

- Instruction: 1) All Questions are Compulsory  
2) Figures to right indicate marks  
3) Start each new question on a fresh page

Q.1 A) Complete the statement by using appropriate word(s). (5x1=5)

- \_\_\_\_\_ data structures organize their data elements one after the other in a sequential fashion..
- \_\_\_\_\_ is a technique to rearrange the elements of the list in ascending or descending order.
- Elements are added to and deleted from the \_\_\_\_\_ of the stack.
- In queue, items can be deleted from the \_\_\_\_\_ and inserted from the \_\_\_\_\_.
- \_\_\_\_\_ file organization provides a very fast access to records specified by key attributes.

Q.1. B) Answer the following. (5x1=5)

- Define the term Abstract Data Type (ADT).
- What do you mean by Divide-and-Conquer paradigm?
- State the use of malloc( ) function.
- What do you mean by LIFO approach?
- Define the terms Enqueue and Dequeue with respect to single ended queue?

Q.2. Answer the following:

A. Convert the following infix expression to postfix expression. (02)

$$(P + (Q * R)) / (S - T)$$

B. Define Big Omega ( $\Omega$ ). Draw appropriate diagram for the same. (03)

X. State any three advantages and two disadvantages of Quick Sort. (05)

OR

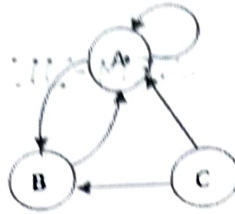
Y. Construct a Binary Search Tree using following data. Find it's preorder and postorder.

16, 18, 3, 8, 5, 20, 17, 9, 3, 50 (05)

P.T.O.

Q.3. Answer the following:

A. What is the In-degree and Out-degree of node A in the below given graph. (02)



B. State any three differences between Stack and Queue data structures. (03)

X. Define B-Tree of order  $m$  with example. (05)

OR

Y. Write a note on Static Hashing. (05)

Q.4. Answer the following:

A. State the conditions necessary to maintain a balanced tree. (02)

B. Write a note on Double Ended Queue. (03)

X. Construct an expression tree using stack. (05)

$(A/B)S(C - (D * E))$

OR

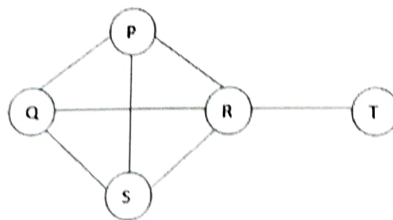
Y. State any five differences between Linked List and Arrays. (05)

Q.5. Answer the following:

A. State and briefly explain any two operations on Linear Lists (02)

B. State any three techniques of resolving the hash collision. (03)

X. Define the term Spanning Tree. Draw any two spanning trees for the following graph. (05)

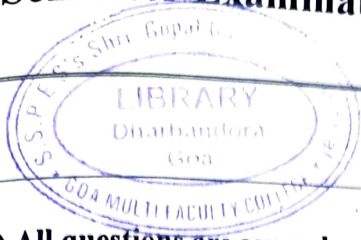


OR

Y. Explain the working of Prim's Algorithm. (05)

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# II Semester Examination, APRIL 2017



Class: FYBCA  
Max marks: 50

Sub: Operating System Concepts  
Duration: 02 HOURS

- Instructions: 1) All questions are compulsory  
2) Figures to the right indicate maximum marks  
3) Start each new question on a fresh page.

Q.1 A) Select the appropriate option and rewrite the statement (5x1=5)

- 1) Full form of PCB \_\_\_\_\_  
a) Process control block      b) Process condition block c) Process control board d) Paging control block
- 2) In \_\_\_\_\_ a routine of a program is not loaded until it is called by the program  
a) dynamic linker b) dynamic loading c) paging d) swapping
- 3) Disk can be subdivided into \_\_\_\_\_  
a) frames      b) pages      c) partitions      d) blocks
- 4) Logical memory divided into blocks of same size called \_\_\_\_\_  
a) partitions      b) pages      c) frames      d) addresses
- 5) when process is busy swapping pages in and out then it is called \_\_\_\_\_  
a) thrashing      b) swapping      c) segmentation      d) fragmentation

(5x1=5)

B) Answer the following

- 1) Define Operating System
- 2) Define Processor
- 3) What is Disk structure
- 4) Define Message Passing
- 5) Define Worms

(10)

Q.2 Answer the following

(02)

A) Define Processes

(03)

B) What are the Functions of Operating System

X) With the help of diagram explain structure of Operating system. (05)

**OR**

Y) With the help of diagram explain process states (05)

**Q.3 . Answer the Following (10)**

A) Explain Synchronization (02)

B) Write short note on memory management (03)

X) Explain different operations on processes (05)

**OR**

Y) Explain paging and segmentation (05)

**Q.4 Answer the Following (10)**

A) Define Distributed System (02)

B) Explain design issues of distributed system (03)

X) Explain different file sharing in detail (05)

**OR**

Y) Explain Cryptography in detail (05)

**Q.5. Answer the Following (10)**

A) Distinguish between Windows and Linux (02)

B) What are the benefits of Web OS (03)

X) Discuss RAID levels in detail (05)

**OR**

Y) Explain different types of threats in computer security (05)

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