**Panskura Banamali College (Autonomous)**

**3rd semester internal assessment -2023**

**Subject: BCA** **Paper code:CC8-T**

**Paper Name: Operating System**

**Full marks:20** **Time:1 hour**

**Answer any Five question:** **5×2=10**

1. What is deadlock ? How computer memory is manage by operating system ?
2. What is compaction?
3. The different between page and frame?
4. Why pages size are always power of 2?
5. Write down different between logical memory vs physical memory .
6. What do you mean by mutual exclusion of deadlock?
7. What is critical section?

**Answer any two question:** **2×5=10**

1.Unsafe state is a deadlock state but all unsafe state is not deadlock state justify your answer . 5

2. Write down difference between internal fragmentation and external fragmentation with diagram. 5

3. Write down the difference between fixed partition multiprogramming and variable partition multiprogramming. What do you mean by hole and wait state .(3+2)

4. Describe about race condition in operating system . 5

# PANSKURA BANAMALI COLLEGE
(AUTONOMOUS)

**2nd Internal Assessment 2023**

**Class: BCA Semester: 3rd Paper: C6 (T)**

**Sub: C++**

**Time – 60 Min. F.M. 20**

***A) Answer any five of the following questions*** 5x2=10

1. What is exception?
2. What is the difference between overloading and overriding?
3. Why we use friend keyword?
4. Difference between constructor and destructor?
5. What is the activity of inline function?
6. Why we do inheritance technique in c++?
7. What is template class?
8. Why define namespace std?

***B) Answer any TWO of the following questions*** 2x5=10

1. Why we use copy constructor?
2. Is possible hybrid inheritance in c++? Explain with example?
3. Why we use private data member in class? Is it accessible by derived class? Explain with example?
4. What is virtual function? Explain with example

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# PANSKURA BANAMALI COLLEGE (AUTONOMOUS)

**B.Sc. 2nd Internal Assessment, 2023**

**3rd Semester**

**Paper :- BCAGE3T**

**Full Marks: 20** **Time: 1 hour.**

**1. Answer any two questions :** $2 \times 5 = 10$

a) Solve the LPP by Simplex method

$$\text{Maximize } Z = x_1 + 3x_2 + 2x_3$$

$$\text{subject to } x_1 + 2x_2 \leq 10$$

$$2x_1 + x_3 \leq 8$$

$$2x_2 + x_3 \leq 6$$

$$\text{and } x_1, x_2, x_3 \geq 0.$$

b) There are six jobs each of which must go first over machine 1 and then over machine 2. The following table gives machine times in hours for six jobs and two machines :

| Job | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Machine 1 | 5 | 9 | 4 | 7 | 8 | 6 |
| Machine 2 | 7 | 4 | 8 | 3 | 9 | 5 |

Find the sequence of the jobs that minimizes the total elapsed time to complete the jobs . Find the minimum total elapsed time and idle time of machine 2.

c) Solve the LPP by Charnes method of penalties

$$\text{Maximize } z = x_1 - 2x_2 + 3x_3$$

$$\text{subject to } -2x_1 + x_2 + 3x_3 = 2$$

$$2x_1 + 3x_2 + 4x_3 = 1,$$

$x_1, x_2$ *and* $x_3 \geq 0$.

d) An established company has decided to add a new product to its line the steps shown in the following table are to be planed

| Activity | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Predecessors | - | A | B | A | D | E | - | G | J, H | - | A | C, K | I, L |
| Duration(days) | 6 | 4 | 7 | 2 | 4 | 10 | 2 | 10 | 6 | 13 | 9 | 3 | 5 |

Draw an arrow diagram for this project.

**2. Answer any one question :** **1 × 10 = 10**

a) Solve the following LPP by two phase method and prove that the problem is said have an unbounded solution.

$$Minimize\ Z = 5x_1 + x_2 - 2x_3 + x_4$$

$$subject\ to\ x_1 + 5x_2 - 8x_3 + 3x_4 = 6$$

$$3x_1 - x_2 + x_3 + x_4 = 2, and\ x_1, x_2, x_3, x_4 \geq 0\ .$$

b) i) Solve the LPP by Big-M method :

$$minimize\ z = 2x_1 + x_2$$

$$subject\ to\ 3x_1 + x_2 \geq 3$$

$$4x_1 + 3x_2 \geq 6$$

$$x_1 + 2x_2 \geq 2, x_1, x_2 \geq 0$$

8

ii) Define artificial variable. 2

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**Panskura Banamali College(Autonomous)**

**2nd Internal Assessment (2023-24)** **Time: 1.00**

**Class: BCA 3rd Semester** **Sub: SEC1** **F.M. 20**

Answer any five Question : $5 \times 2=10$

1. What is a style sheet?
2. What is the use of an iframe tag?
3. What are the limits of text field size?
4. Advantages of xhtml.
5. What is the domain name space?
6. Write the html code to create table with in a table?
7. Short note:- search Engine and DNS?
8. Function of transport layer(any two)?

Answer any Two Question : $2 \times 5=10$

1. Explain the Www architecture with diagram?
2. What is Mailing List, types of mailing list, how does mailing list work?
3. Can you have two or more submit buttons in a same form, explain?
4. How do you remove the border around frames?

**BCA 3rd Semester Internal Examination: 2023**

**Subject :Operating System** **Paper Code:CC7**

**Marks:10** **Time:30 minutes**

**Answer any Five out of Eight**

1. **What is Operating System?**
2. **What is GUI?**
3. **What is Multi-tasking?**
4. **What is Page?**
5. **What is Frame?**
6. **What do you mean by Memory Management?**
7. **What is kernel?**
8. **What is Thread?**

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**Panskura Banamali College(Autonomous)**

**Paper: SEC1** **Course: BCA 3rd sem**

**Sub: Web Technology & Internetworking**

**F.M.- 10**

**A. Answer any Five questions: 5*2=10**

a. What do you mean by Network Topology?
b. Why Repeaters are used in computer network?
c. Write a short note on Star Topology.
d. What is NIC?
e. Write down the layers of OSI Model with diagram.
f. Write down the function of Data Link Layer.
g. What is Marquee?
h. Write down the difference between OSI model and TCP/IP Model.

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# PANSKURA BANAMALI COLLEGE
## (AUTONOMOUS)
### 2nd Internal Assessment 2023-2024
### Class- BCA 3rd Semester Paper – CC5T
### Sub- DBMS

F.M.- = 20 Time – 1 hour.

*Answer any five (5 X 2)=10*

11. What is a Degree of a Relation ?
12. What is Data Abstraction ?
13. What is Lock based Protocol?
14. What is De-Normalization?
15. What is Stored Pocedure?
16. What is the Unique Index in DBMS?
17. What are the types of File Organization ?
18. What is Serializability ?
19. Difference between DBMS and Flat File?
20. Difference between Delete and Truncate clause in SQL?

*Answer any two (2 X 5)=10*

6. Explain 12 Codes?
7. Explain ACID properties ?
8. Explain Data Models(including their types)?
9. Explain Integrity Constraints (including their types)?
10. Explain Deadlock in DBMS(with diagram)?

# PANSKURA BANAMALI COLLEGE

(AUTONOMOUS)

**B.Sc. 3rd Semester Examination (ESE) 2023**

**BCA**

**Paper: GE3T**

**Operation Research**

**Full Marks: 60**

**Time: 3 hours**

(The figure in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable)

## Group-A

**Answer ten questions** **10x2=20**

1) Find the inverse of the matrix $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$
2) Define degenerate basic solution and non-degenerate basic solution.
3) What is hyperplane?
4) Define slack and surplus problem.
5) Define dual problem.
6) What is maximin and minimax principle?
7) What is pay-off matrix?
8) Express the minimization problem into standard maximization problem

$$\text{Minimize } Z = 2x_1 - x_2 + x_3$$

$$\text{Subject to } 4x_1 + x_2 + x_3 = 6$$

$$7x_1 + 3x_2 + 2x_3 \geq 20$$

$$4x_1 + 7x_2 - 3x_3 \leq 10$$

$$\text{and } x_1, x_2, x_3 \geq 0$$

9) What is an unbalanced transportation problem? How can you convert it into a balanced transportation problem?
10) Find the I.B.F.S. of the following T.P. using VAM

| | $D_1$ | $D_2$ | $D_3$ | $\alpha_i$ |
|---|---|---|---|---|
| $O_1$ | 30 | 20 | 10 | 50 |
| $O_2$ | 5 | 15 | 25 | 50 |
| $b_j$ | 30 | 30 | 40 | |

11) Formulate mathematically a balanced transportation problem as a LPP having *m* origins and *n* destinations (m, n ≥ 2).

12) What is Redundant constraints?

13) What are artificial variables? Why do you need them?

14) Obtain the dual LPP of the following primal LPP

$$\text{Minimize } Z = x_1 + 2x_2$$
$$\text{Subject to } 2x_1 + 4x_2 \leq 160$$
$$x_1 - x_2 = 30$$
$$x_1 \geq 10$$
$$\text{and } x_1, x_2 \geq 0$$

15) Write down four differences between PERT and CPM.

## Group-B

**Answer four questions** **4x5=20**

16) Solve the LPP graphically:

$$\text{Maximize } Z = 4x + 5y$$
$$\text{subject to } \begin{cases} x + y \leq 2, \\ 2x + y \geq 1, \end{cases}$$

17) Using Big-M method to solve the following problem:

$$\text{Maximize } Z = 4x + 5y$$
$$\text{subject to } \begin{cases} 2x + y + z \leq 2, \\ 3x + 4y + z \geq 8, \end{cases}$$
$$x, y, z \geq 0.$$

18) Show that hyperplane is a convex set.

Find all basic solutions to the system of linear equations $\begin{cases} 2x + y - z = 2 \\ 3x + 2y + z = 3 \end{cases}$

19) Solve the LPP by simplex method

$$\text{Maximize } Z = x_1 + 3x_2 + 2x_3$$

$$\text{Subject to } x_1 + 2x_2 \leq 10$$

$$2x_1 + x_3 \leq 8$$

$$2x_1 + x_3 \leq 6$$

$$\text{and } x_1, x_2, x_3 \geq 0$$

20) Find the optimal assignment to find the minimum cost for the assignment problems with following cost matrices

| | A | b | c | d |
|---|---|---|---|---|
| 1 | 18 | 26 | 17 | 11 |
| 2 | 13 | 28 | 14 | 26 |
| 3 | 38 | 19 | 18 | 15 |
| 4 | 19 | 26 | 24 | 10 |

21) There are six jobs each of which must go first over machine 1 and then over machine 2. The following table gives machine times in hours for six jobs and two machines:

| Job | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Machine 1 | 5 | 9 | 4 | 7 | 8 | 6 |
| Machine 2 | 7 | 4 | 8 | 3 | 9 | 5 |

Find the sequence of the jobs that minimizes the total elapsed time to complete the jobs. Find the minimum total elapsed time and idle time of machine 2.

## Group-C

Answer two questions **2x10=20**

22) Convert the primal problem to the dual problem:5+5

$$\text{Minimize } w = 2x - 5y + z$$

subject to

$$\begin{cases} x + y + 2z \geq 5 \\ 2x + 3y + 4z \geq 3 \\ 5x + 4y + z \geq 7 \end{cases}$$

$$x, y, z \geq 0$$

Find the dual of the following problem:

$$\text{Maximize } z = x_2 - x_2 + 3x_3 + 2x_4$$

$$\text{subject to} \quad \begin{cases} x_1 + x_2 \geq -1 \\ x_1 - 3x_2 - x_3 \leq 7 \\ x_1 + x_3 - 3x_1 \geq -2 \end{cases}$$

$x_1, x_4, \geq 0, x_2, x_3$ unrestricted in sign

23) Solve the following game problem using maximin and minimax principle:10

B

| A | 4 | -2 | 1 |
|---|---|---|---|
| | 3 | 4 | 2 |
| | -3 | 4 | 0 |

(All the symbol and notifications have their usual meaning)

24) i) The following table provides all the necessary information on the availability of supply to each warehouse, the requirement of each market, and the unit transportation cost (in Rs) from each warehouse teach market

| Market | | | | | | |
|---|---|---|---|---|---|---|
| Warehouse | | P | Q | R | S | Supply |
| | A | 6 | 3 | 5 | 4 | 22 |
| | B | 5 | 9 | 2 | 7 | 15 |
| | C | 5 | 7 | 8 | 6 | 8 |
| | Demand | 7 | 12 | 17 | 9 | |

Find the optimal schedule and minimum total transportation cost.

ii) What is meant by the term Critical path. 8+2

# PANSKURA BANAMALI COLLEGE

(AUTONOMOUS)

**B.Sc. 3rd Semester Examination (ESE) 2023**

**BCA**

**Paper: SEC1T**

**Web Technology & Internetworking**

**Full Marks: 25**

**Time: 2 hours**

(The figure in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable)

## Group-A

**Answer five questions** **5x2=10**

1) How do you create an ordered list in HTML?
2) What is a frameset?
3) Can you nest tables with in a tables?
4) How to create link to send email, give an example?
5) What is a Style Sheet?
6) What is cookie?
7) What is circuit switching?
8) What is local host?

## Group-B

**Answer three questions** **5x3=15**

9) Difference between the  and  tags in HTML?
10) How can images be used as links? Explain with examples.
11) How to use the CSS styling based on text format? Explain.
12) What are web Development process, explain with diagram?
13) Explain CSMA/CD.

# PANSKURA BANAMALI COLLEGE

(AUTONOMOUS)

**B.Sc. 3rd Semester Examination (ESE) 2023**

**BCA**

**Paper: CC7T**

**Operating System (OS)**

**Full Marks: 40**

**Time: 2 hours**

## Group-A

**Answer five questions** **5x2=10**

1) Why disk scheduling is important?
2) Compare thread and process.
3) What is the difference between short term scheduler and long term scheduler?
4) Why is process synchronization important in operating systems?
5) Define demand paging.
6) What are the various file system allocation methods?
7) What is Context Switching?
8) What is seek time?

## Group-B

**Answer four questions** **4x5=20**

9) Explain the FIRST fit, and Worst fit allocation algorithms with the help of example.
10) Explain Belady's Anomaly.
11) Consider a machine with 64 MB physical memory and a 32-bit virtual address space. If the page size is 4KB, what is the approximate size of the page table?
12) How is process scheduling important in multitasking environments?
13) What is the purpose of semaphores in process synchronization? Explain the concept of a critical region.

14) What is the difference between logical and physical address space?

## Group-C

**Answer one questions** **1x10=10**

15) What is thrashing? Consider a reference string: 4,7,6,1,7,6,1,2,7,2. the number of frames in the memory is 3. Find out the number of page faults respective to:

i) Optimal page Replacement Algorithm

ii) LRU page Replacement Algorithm 2+4+4

16)

| Process | Max | Allocation | Available |
|---|---|---|---|
| | A, B, C, D | A, B, C, D | A, B, C, D |
| P0 | 6 0 1 2 | 4 0 0 1 | 3 2 1 1 |
| P1 | 2 7 5 0 | 1 1 0 0 | |
| P2 | 2 3 5 6 | 1 2 5 4 | |
| P3 | 1 6 5 3 | 0 6 3 3 | |
| P4 | 1 6 5 6 | 0 2 1 2 | |

Using Banker's algorithm, answer the following questions: -

i) How many resources of type A, B, C, D are there?

ii) What are the contents of need matrix?

iii) Find if the system is in safe state? If it is, find the safe sequence. 2+3+5

# PANSKURA BANAMALI COLLEGE

(AUTONOMOUS)

**B.Sc. 3rd Semester Examination (ESE) 2023**

**BCA**

**Paper: CC6T**

**Object Oriented using C++**

**Full Marks: 40**

**Time: 2 hours**

(The figure 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 five questions.** **5x2=10**

1) What is abstraction? Give example.
2) What is scope resolution operator?
3) Define I/O stream.
4) How encaptulation implemented in C++?
5) What is friend function?
6) Write the significant of 'Protected` access specifier.
7) How the ambiguity in multiple inheritance can be resolved?
8) What is Aggregation?

## Group-B

**Answer any four questions.** **4x5=20**

9) How does function overloading implement polymorphism? Explain it with example.
10) What are various methods for opening a file in C++.
11) Write a program in C++ to find the sum of the digits of a given number.
12) Explain the use of constructor and destructor with the help of an example.
13) Explain different types of inheritance with help of suitable example.
14) Differentiate between operator overloading and overriding.

## Group-C

**Answer any one questions.** **1x10=10**

15) Write a C++ program to implement a class called shape with virtual member functions for calculating area and perimeter. Derive classes such as Circle, Rectangle, and Triangle from the shape class and override virtual functions accordingly.

16) What do you mean by exception handling? How exception handling is done in C++ illustrate with suitable example.

1+2+3+4+5

15

# PANSKURA BANAMALI COLLEGE

(AUTONOMOUS)

**B.Sc. 3rd Semester Examination (ESE) 2023**

**BCA**

**Paper: CC5T**

**Data Base Management System (DBMS)**

**Full Marks: 40**

**Time: 2 hours**

(The figure 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 five questions** **5x2=10**

1) What is strong and weak entity set?
2) What is Participation constraints and its type?
3) What is Specialization and Generalization?
4) What is Surrogate Key?
5) What is partial functional dependency?
6) Why do you need a foreign Key?
7) When BCNF is required?
8) What do you mean by Data Redundancy?

## Group-B

**Answer any four questions** **4x5=20**

9) What is EQUI join in DBMS (with example)?
10) Explain ACID properties in DBMS?
11) What are the Types of Schedules?
12) What is Data Abstraction? Explain the three-layer architecture of DBMS. (2+3)
13) Let R=(ABCDEF), F={ AB→C, C→DE, E→F, F→A} . Find the highest Normal From.
14) 'A super Key is always Candidate key'-true or false? Justify with suitable example.

## Group-C

**Answer any one questions** **1x10=10**

15) Consider there are three transactions with 2, 3, 4 operations respectively, find-

i) How many total number of schedules are possible?

ii) How many total number of serial schedules are possible?

iii) How many total number of non-serial schedules are possible?

16) What is Normalization? Why does Normalization used in DBMS? Why does BCNF is stronger than 3NF? Discuss with example. 2+3+5=10

# PANSKURA BANAMALI COLLEGE (AUTONOMOUS)

**B.Sc. 1st Internal Assessment Examination- 2023**

**3rd Sem (Hons.)**

**Paper : ECAGE3T** **Subject : OR**

**Full Marks: 10** **Time: 30 min.**

Answer any five of the following

1. a) What is the relation between the optimum value maximization and minimization problem?
   b) write down the standard form of a general L.P.P.
2. Express the following minimization problem into standard maximization problem.

$$\text{Minimize } Z = 2x_1 - x_2 + x_3$$

Such that

$$4x_1 + x_2 + x_3 = 6$$
$$7x_1 + 3x_2 + 2x_3 \geq 20$$
$$4x_1 + 7x_2 - 3x_3 \leq 10, \quad x_1, x_2, x_3 \geq 0.$$

3. Define basic feasible solution. Hence show that $x_1 = 2, x_2 = 1, x_3 = 0, x_4 = 2$ is a solution of the set of equations but not basic.

$$2x_1 - 3x_2 + x_3 - 4x_4 = 1, \quad 3x_1 - 6x_2 - x_3 - 2x_4 = -3, \quad 2x_1 + 4x_2 + 2x_3 + x_4 = 12$$

4. Define with example the following components.
   a) Slack variable
   b) Surplus variable
   c) Non-degenerate B.F.S
   d) Degenerate B.F.S
5. Draw the feasible region of the L.P.P

$$\text{Maximize } z = 5x_1 - 2x_2$$
$$\text{Such that } 5x_1 + 6x_2 \geq 30$$
$$9x_1 - 2x_2 = 72$$
$$x_2 \leq 9, \qquad x_1, x_2 \geq 0.$$

6. Obtain an initial B.F.S to the following transportation problem using Vogel's approximation method.

| | | | | $a_i$ |
|---|---|---|---|---|
| | 5 | 1 | 8 | 12 |
| | 2 | 4 | 0 | 14 |
| | 3 | 6 | 7 | 4 |
| $b_j$ | 9 | 10 | 11 | |

7. Define balanced and unbalanced T.P. with suitable examples.
8. Find out the optimal assignment cost from the following cost matrix using Hungarian method.

| | I | II | III | IV |
|---|---|---|---|---|
| A | 9 | 6 | 6 | 5 |
| B | 8 | 7 | 5 | 6 |
| C | 8 | 6 | 5 | 7 |
| D | 9 | 9 | 8 | 8 |

**PANSKURA BANAMALI COLLEGE**
**(AUTONOMOUS)**
**1st Internal Assessment 2023**
**Class: BCA Semester: 3rd Paper: C6 (T)**
**Sub: C++**
**Time – 30 Min. F.M. 10**

***Answer any five of the following questions*** 5x2=10

1) What is array? Example.
2) What is Inline function?
3) What is abstraction?
4) What are difference between c and c++?
5) What is polymorphism?
6) What are the difference between '<' and '<<'?
7) What is 'enum' data type?
8) How many keyword in c++? Give four keyword of c++.

# PANSKURA BANAMALI COLLEGE
## (AUTONOMOUS)
### Internal Assessment 2023
### Class- BCA 3rd Semester Paper – CC5T
### Sub- DBMS

**F.M.- (2 X 5) = 10** **Time – 1 hour.**

***Answer any five :-***

1. Difference between Weak and Strong Entity set?
2. What is one to one Cardinality, give an example (with diagram) ?
3. What is total Participation; give an example (with diagram)?
4. What is Derived Attributes, give an example (with diagram)?
5. What is Entity Integrity Constraints, give an example?
6. Difference between Foreign Key and Unique Key ?
7. What is the function of Drop and Truncate in SQL?
8. Draw the Transaction States diagram?
9. What is "D" in ACID property(minimum write two points) ?
10. Difference between DBMS and Flat File management System?