

END SEMESTER EXAMINATION, DECEMBER - 2024
BCA Semester - III

**Course Name: Organizational Behaviour &
Personnel Management**

Course Code: BCA205

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1 VERY SHORT ANSWER QUESTIONS – Attempt All. (2x10 = 20 Marks) **CO**

- | | |
|--|---|
| a. Define Personnel Management. | 1 |
| b. State objectives of Personnel Management. | 1 |
| c. Define worker's participation in management. | 1 |
| d. What is the difference between job analysis and job evaluation? | 1 |
| e. Describe a type of group found in organizations. | 1 |
| f. Describe the difference between training and development. | 2 |
| g. What are the roles and responsibilities of a welfare officer? | 2 |
| h. What are the benefits of external recruitment? | 2 |
| i. What is a strategy for managing team conflicts? | 2 |
| j. How does organizational culture affect group dynamics? | 2 |

Q.2 SHORT ANSWER QUESTIONS – Attempt any Five. (4x5 = 20 Marks) **CO**

- | | |
|---|---|
| a. Explain how group discussions contribute to effective decision-making in an organization. | 3 |
| b. Describe how internal sources of recruitment benefit an organization. | 3 |
| c. Explain the purpose of induction programs in integrating new employees into an organization. | 3 |
| d. Describe the role of job evaluation in determining fair employee compensation. | 3 |
| e. Explain the significance of Human Resource Planning in organizational growth and development. | 4 |
| f. Discuss factors that determine the effectiveness of different recruitment sources. | 4 |
| g. What are the objectives and scope of personnel management in the modern corporate environment? | 4 |

Q.3 STRUCTURED QUESTIONS – Attempt any Three. (3x10 = 30 Marks) **CO**

- | | |
|--|---|
| a. Explain the importance and differences of decision-making in group vs. individual settings. | 4 |
| b. Analyze the challenges and advantages of implementing Management by Objectives (MBO) in an organization. | 4 |
| c. Discuss strategies for managing conflicts within teams, evaluating their effectiveness in various team dynamics. | 5 |
| d. Examine the impact of worker participation on organizational culture and productivity, assessing its overall effectiveness. | 5 |

Q.4 CASE ANALYSIS/ SITUATION BASED – Attempt any Two. (2x15 = 30 Marks) **CO**

- | | |
|--|---|
| a. Describe the induction process and its importance in onboarding new employees, highlighting the role of the personnel officer in the process. | 5 |
| b. Discuss the evolution of personnel management from its traditional focus on administrative tasks to its current role as a strategic function in organizations, evaluating the impact of this shift. | 6 |
| c. Evaluate the role of organizational ethics in shaping employee behavior and organizational culture. | 6 |

END SEMESTER EXAMINATION, DECEMBER - 2024
BCA Semester - III

Course Name: Design Thinking

Course Code: BC233T

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Attempt all.

(10×2=20)

QN	Questions	CO	PO
a.	What is creativity?	CO	PO
b.	What is innovation?	1,2	1,2,3
c.	How does creativity differ from innovation in terms of focus?	3,4,5	4,5
d.	Give an example of how creativity sparks innovation in business or technology.	1,2	1,2,3
e.	What is the role of originality in creativity?	3,4,5	4,5
f.	How does innovation ensure that creative ideas solve real problems?	3,4,5	4,5
g.	Why is scalability an important characteristic of innovation?	1,2	1,2,3
h.	What is the difference between the outcome of creativity and the outcome of innovation?	3,4	4,5
i.	How can creative thinking help solve problems in new ways?	3,4,5	4,5
j.	What are some examples where creativity led to innovation, such as the light bulb or the automobile?	1,2	1,2,3

Q.2. Attempt any five out of Seven.

(5×4=20)

QN	Questions	CO	PO
a.	What are the key differences between creativity and innovation, and how do they complement each other in an organizational context?	3,4,5	4,5
b.	How does creativity contribute to problem-solving in organizations, and can you provide an example from the article?	1,2	1,2,3
c.	Why is fostering creativity important for organizations, and how does it help organizations adapt to changing market conditions?	3,4,5	4,5
d.	What role does innovation play in driving business growth, and what are some examples of innovation leading to organizational success?	1,2	1,2,3
e.	How can a culture of creativity and innovation be cultivated within an organization? Provide two examples of companies that have successfully done this.	3,4,5	4,5
f.	Discuss the impact of innovation on improving operational efficiency and productivity, as illustrated in the article.	1,2	1,2,3
g.	How does cross-disciplinary collaboration contribute to creativity and innovation in organizations? Provide an example of a company that uses this approach effectively.	3,4,5	4,5

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Q.3. Attempt any three out of four.

(3×10=30)

QN	Questions	CO	PO
a.	Explain the difference between creativity and innovation. How do they complement each other in driving progress and solving real-world problems? Provide examples to illustrate their relationship.	1,2	1,2,3
b.	Describe how creativity can spark innovation. How does creative thinking help identify opportunities, solve problems, and push boundaries in the innovation process?	3,4,5	4,5
c.	Discuss how innovation builds upon creativity. What are the steps involved in turning creative ideas into practical, scalable solutions? Provide real-world examples of this transformation.	1,2	1,2,3
d.	Summarize the product development process from start to finish. What are the key stages and their respective goals?	1,2	1,2,3

Q.4. Attempt any two out of three.

(2×15=30)

QN	Questions	CO	PO
a.	What are the key characteristics that define creativity and innovation? How do these characteristics influence their role in technological advancements, business strategies, and societal progress?	3,4,5	4,5
b.	How do the processes of creativity and innovation differ in terms of focus, outcome, and goals? Use specific examples to highlight how the two processes work together to bring ideas to life.	1,2	1,2,3
c.	Why is it important for individuals and organizations to embrace both creativity and innovation? How can organizations cultivate a culture that supports both creative thinking and innovation?	3,4,5	4,5

END SEMESTER EXAMINATION, DECEMBER - 2024

BCA Semester III

Course Name: Data Management System

Course Code: BC232T

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Objectives Type (Very short) Attempt all. (10×2=20)

QN	Questions	CO	PO
a.	Define RDBMS?	CO2	PO1
b.	Define Atomicity.	CO5	PO1
c.	List aggregate functions supported by SQL.	CO3	PO1
d.	What is NOT NULL Constraint?	CO2	PO1,2
e.	What are anomalies?	CO4	PO1
f.	What is serializability?	CO5	PO1
g.	What is mean by domain integrity?	CO2	PO1,2
h.	Define derived attribute.	CO2	PO1
i.	Which normal form is based on full functional dependency?	CO4	PO1
j.	What do you mean by alternate key?	CO2	PO1

Q.2. Short notes Type (Attempt any five out of Seven) (5×4=20)

QN	Questions	CO	PO
a.	Explain the concept of Aggregation and Generalization in context of ER model.	CO2	PO1,2,8
b.	Why Primary key constraints are important? How is it different from Unique Key?	CO2	PO1,2
c.	Explain various type of data model. Compare and contrast.	CO1	PO1,2
d.	What is Database? Explain three levels of architecture of database system.	CO1	PO1
e.	What is 1NF? Explain with the help of an example.	CO5	PO1,2
f.	Define Join dependency with the help of example.	CO3	PO1
g.	Explain log-Based Recovery in detail.	CO5	PO1

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Q.3. Structured Question (Attempt any three out of four)

(3×10=30)

QN	Questions	CO	PO
a.	Attempt all. (5+5) (i) Consider the below transaction. Is the transaction being conflict serializable? If yes, Write serial schedule's equivalent order. S: R2(X), W3(X) C, W1(X) C, W2(Y), R2(Z) C, R4(X), R4(Y) C	CO5	PO1,2
	(ii) R = (A, B, C, G, H, I) and the set of functional dependencies $A \rightarrow B$, $A \rightarrow C$, $CG \rightarrow H$, $CG \rightarrow I$, $B \rightarrow H$ List the candidate keys for R and find highest normal form.	CO4	PO1,2
b.	Attempt all. (5+5) (i) Explain SQL. Define different SQL Commands with the help of example. (ii) Explain GROUP BY and ORDER BY command with example.	CO3	PO1,8
		CO3	PO1,4
c.	Attempt all. (5+5) (i) Define the concept of Transaction. With the help of a diagram, describe State Transition Diagram for a Database Transaction. (ii) Explain various type of relational algebra operation from set theory with example.	CO5	PO1,2
		CO2	PO1,2
d.	Attempt all. (5+5) (i) Database Anomalies (ii) Joins	CO4	PO1
		CO4	PO1

Q.4. Long Answer type (Attempt any two out of three)

(2×15=30)

QN	Questions	CO	PO
a.	(i) Design an E-R diagram for college management system consisting of student, department, faculty, course and hostel. Clearly highlight the entities, relationships, primary key and the mapping constraints.	CO3	PO1,2,8
	(ii) What do you mean by DBMS? Give advantages of DBMS over file processing system.	CO1	PO1,2
b.	(i) Explain view Serializability with an example? How it is different from conflict Serializability?	CO5	PO1,2
	(ii) What is the two-phase locking protocol? How does it guarantee serializability?	CO5	PO1
c.	(i) Why we need Normalization? Explain different types of Normal Forms with the help of examples.	CO2	PO3
	(ii) Explain the following commands insert, create, drop, update by writing their syntax.	CO4	PO1,2,4

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END SEMESTER EXAMINATION, DECEMBER - 2024

BCA Semester III

Course Name: Operating Systems

Course Code: BCA204

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Objectives Type
(Very short) Attempt all.

(10×2=20)

a.	Which types of the operating system switches between processes to keep the CPU busy?	CO1	PO1
b.	Who is responsible for organizing and controlling access to data stored on disk or other storage devices?	CO1	PO1
c.	Define critical section problem	CO2	PO1,2
d.	What is a cooperative process	CO2	PO1
e.	Consider a system where counting semaphores value is initialized to +15, the various semaphores operations like 2P,7V,15P,13V,2P operations are performed, then what is the final value of semaphore?	CO2	PO1,2
f.	Define paging	CO3	PO1,2
g.	What do you mean by Compaction?	CO3	PO1
h.	Define protection in operating system.	CO4	PO1,4,8
i.	Write the name of access method in file system management	CO4	PO1
j.	Define shell scripting	CO5	PO1,8

Q.2. Short notes Type (Attempt any five out of Seven)

(5×4=20)

a.	Define essential properties of Batch Operating System?	CO1	PO1,8
b.	Discuss the CUP scheduling criteria	CO2	PO1,2
c.	How does demand paging differ from pre-paging in virtual memory?	CO3	PO1,2,8
d.	What are the design principles emphasized by the UNIX operating system?	CO4	PO1,8
e.	Consider a system with ten magnetic tape drives and three processes P1, P2 and P3. Process P1 requires maximum ten tape drives, process P2 may need as many as four tape drives and P3 may need upto nine tape drives. Suppose that at time t1, process P1 is holding three tape drives, process P2 is holding two tape drives and process P3 is holding three tape drives. At time t1, if the system is in safe state, then what would be the safe sequence? Also Justify your answer	CO3	PO1,2
f.	Consider a disk queue with requests for I/O to blocks on cylinders 98, 183, 37, 122, 14, 124, 65, 67. Calculate the total number of head movements for FCFS and SSTF disk scheduling algorithms, if the disk head is initially at 55.	CO5	PO1,2
g.	Given five memory partitions of 150 KB, 400 KB, 200 KB, 300 KB, and 600 KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB, and 426 KB (in order)?	CO5	PO1,2,8

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Q.3. Structured Question (Attempt any three out of four)

a.	(i) Define Thread (ii) How the thread is different from process (iii) Discuss the state of a process	CO2	(3×10) PO1,2
b.	(i) Define logical address (ii) Define physical address (iii) Differentiate between logical and physical address	CO3	PO1,2
c.	(i) Define File Attributes (ii) Define File Operations (iii) Define File Types	CO4	PO1,2,8
d.	(i) Define Dual Mode (ii) Define Interface of Operating System (iii) Define Protection and Security of Operating System	CO1	PO1,2,8

Q.4. Long Answer type (Attempt any two out of three)

(2×15=30)

a.	(i) Consider the following five processes, with the length of the CPU burst time given in milliseconds. Process Burst time P1 10 P2 29 P3 3 P4 7 P5 12 Calculate Average waiting time for the First come First serve (FCFS), Non Preemptive Shortest Job First(SJF), Round Robin(RR) (quantum=10ms) scheduling algorithms.	CO2	PO1,2
b.	Consider the following four processes, with the length of the CPU burst time given in milliseconds. Process Burst time Priority Arrival Time P1 18 3 1 P2 2 1 2 P3 7 2 0 Calculate Average Waiting time for priority, SRTF and SJF scheduling algorithm	CO2	PO1,2
c.	(i) Explain Critical section problem (ii) Explain single and tree level structure in UNIX (iii) Explain Access Mechanism system	CO1,2,5	PO1,2,8

END SEMESTER EXAMINATION, DECEMBER- 2024

BCA Semester - III

Course Name: Programming in JAVA

Course Code: BC231T

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Objectives Type

(Very short/ Short Answer, MCQ, One-liners, Fill in the Blank, True/ False) Attempt all. (10×2=20)

QN	Questions	CO	PO
a.	Explain platform independent property of Java?	1	1
b.	Is multiple inheritance supported by Java? If no, then how it can be achieved	1	1
c.	Overloading and overriding achieve which property of object-oriented concepts? Discuss that property.	1	1
d.	What is an abstract class and what is its purpose?	1	1
e.	Write the output of the following code: <pre>public class sanchi1 { public static void main(String[] args) { int x = 2; switch (x) { case 1: System.out.println("One"); case 2: System.out.println("Two"); case 3: System.out.println("Three"); default: System.out.println("Default"); } } }</pre>	1	1
f.	Write the output of the following code: <pre>public class Main { public void display(int x) { System.out.println("Integer: " + x); } public void display(double x) { System.out.println("Double: " + x); } public static void main(String[] args) { Main obj = new Main(); obj.display(5); obj.display(5.5); } }</pre>	1	1
g.	Show the use of static keyword in java with an example code.	1	1
h.	Explain default constructor?	1	1
i.	Explain Prepared Statement in JDBC?	5	1,2
j.	Differentiate between JDBC and ODBC?	5	1,2

P.T.O./-

Q.2. Short notes / Short Answer Type (Attempt any five out of Seven)			(5×4=20)	
QN	Questions	CO	PO	
a.	Explain package. Write programs to create and import a package.	2	1,2	
b.	Explain the concept of multidimensional array in java. What will be the output of the following javacode? <pre> public class Two D Array Example { public static void main(String[] args) { int[][] matrix = { {1, 2, 3}, {4, 5, 6}, {7, 8, 9} }; System.out.print(matrix); System.out.print(matrix[0]); System.out.print(matrix[0][1]); } } </pre>	2	1,2	
c.	Explain following clause w.r.t. exception handling: (i) try (ii) catch (iii) throw (iv) finally	2	1,	
d.	Explain interface in Java, and why do we use it? What is the default access modifier for methods and fields in an interface?	2	1,2	
e.	Explain the concept of garbage collection in Java.	3	1,2	
f.	Write a program of creating a thread by implementing runnable class.	3	1,2	
g.	Define applet. Write a program to create an applet to display message "Welcome to java applet"	4	1,2	

Q.3. Structured Question (Attempt any three out of four)			(3×10=30)	
QN	Questions	CO	PO	
a.	Write a Java program to simulate a race between multiple threads.	3	1,2	
b.	Explain all the methods used in multithreading?	3	1,2	
c.	Explain the syntax of following terms to create them: • FlowLayout • GridLayout • BorderLayout • CardLayout	4	1,2	
d.	Develop a Java program to create a TCP client that connects to a server and sends a message.	4	1,2	

Q.4. Long Answer / Essay type (Attempt any two out of three)			(2×15=30)	
QN	Questions	CO	PO	
a.	Explain the JVM and JRE in Java. Discuss their components and role in program execution.	1	1	
b.	What are the different drivers available in JDBC? Briefly explain all of these.	5	1,2	
c.	Write a JDBC program to insert information of a student (rollno, name, marks, grade) and display the inserted information.	5	1,2	

END SEMESTER EXAMINATION, DECEMBER - 2024

MCA Semester – III/ BCA Semester -III

Course Name: Design and Analysis of Algorithms Course Code: MCA231/BC234T

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Attempt All questions. Each carries equal marks.

(10X2=20)

a.	Define time complexity.	CO1	PO1
b.	DFS stands for.....	CO2	PO1
c.	What is Heap?	CO2	PO2
d.	AVL stands for.....	CO3	PO1
e.	Define binary search tree.	CO2	PO2
f.	What is Big-O notation?	CO1	PO2
g.	Is $3n^2$ is $O(n)$? Yes/ No	CO1	PO2
h.	Define tree.	CO2	PO1
i.	Average case time complexity is denoted by.....	CO1	PO2
j.	What is lower bound concept?	CO5	PO2

Q.2. Attempt any five questions. Each carries equal marks

(5X4=20)

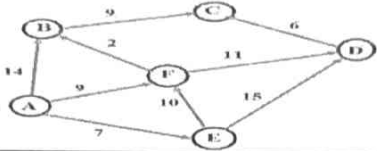
a.	Define Algorithm and its characteristics. Explain asymptotic notations.	CO1	PO2
b.	Explain the divide and conquer strategy for solving the problem. What is the worst-case time complexity of Quick Sort.	CO2	PO1
c.	Explain merge sort with suitable example.	CO2	PO2
d.	Explain binary search tree with suitable example.	CO2	PO2
e.	Discuss greedy method. Explain multistage graph problem with example.	CO3	PO3
f.	What is Dynamic programming? Explain traveling salesman problem with an example.	CO4	PO1
g.	Explain the 0/1 knapsack problem using suitable example.	CO5	PO2

Q3. Attempt any three questions. Each carries equal marks.

(3X10=10)

a.	Find the optimal solution for the following instance using greedy method. No of objects= 8 Knapsack capacity = 25 Profits ($p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8$) = (10, 5, 15, 7, 6, 18, 3, 40) Weights ($w_1, w_2, w_3, w_4, w_5, w_6, w_7, w_8$) = (2, 3, 5, 7, 1, 4, 1, 5)	CO3	PO1
b.	Find MST (Minimum Spanning Tree) for the given graph using Prim's algorithm. Starting vertex is A. 	CO3	PO3

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c.	For the given graph find the shortest path from A to C using Dijkstra algorithm.	CO3	PO5
			
d.	Define max heap and min heap. Write an algorithm for Heapify () a tree. Build Max heap from the following numbers: 7, 9, 34, 6, 10, 3, 15, 25, 40	CO4	PO2

Q4. Attempt any two questions. Each carries equal marks.

(2X15=30)

a.	Explain the divide and conquer strategy for solving the problem. What is the worst-case time complexity of Quick Sort? For the given set of elements. Show all the steps for the execution of Quick Sort on the following list of elements: 20, 10, 40, 30, 12, 50, 5, 25, 35, 2	CO2	PO2
b.	Define AVL tree. What is the balance factor in the AVL tree? Insert the following sequence of elements in the AVL tree, starting with an empty tree: 10, 20, 15, 25, 30, 16, 35, 40, 5	CO3	PO3
c.	Obtain a set of optimal Huffman codes for a set of the seven messages (m1, m2, m3, m4, m5, m6, m7) with a relative frequency (q1, q2, q3, q4, q5, q6, q7) = (4, 5, 7, 9, 12, 18, 25). Draw the decode tree for this set of codes and write the Huffman code for each of the message.	CO4	PO2

END SEMESTER EXAMINATION, DECEMBER - 2024

BCA Semester - III

Course Name: Object Oriented Programming and Design Course Code: BCA203

Time allotted: 03 Hours

Max. Marks: 100

Note: Read all the instructions carefully.

Q.1. Objectives Type

(Very short/ Short Answer, MCQ, One-liners, Fill in the Blank, True/ False) Attempt all.

(10×2=20)

	CO	PO
a. Attributes are the data that represents characteristics of interest about an object. (True/False)	4	1
b. An object class is a set of object instances that share the same attributes and behavior. (True/False)	2	1
c. An attribute is passed when one object invokes one or more of another object's methods (behaviors) to request information or some action. (True/False)	2	1
d. _____ is a template or blueprint from which objects can be instantiated from.	4	1
e. To distinguish between active and non-active object which property is applied?	2	1
f. Explain "is -a" and "has-a" relationships.	3	2
g. A function argument is a value returned by the function to the calling program. [True/False]	3	2
h. Functions cannot return class objects. [True/False]	3	1
i. The character array is called _____.	1	1
j. Explain data hiding.	1	1

Q.2. Short notes / Short Answer Type (Attempt any five out of Seven)

(5×4=20)

a. List out the different object oriented programming concepts.	2	1
b. Explain the following terms: Generalization and Specialization.	3	1
c. Differentiate between local variable and global variable.	3	2
d. Differentiate between early binding and late binding.	4	1
e. Mention the characteristics of the friend function.	4	1
f. Write the characteristics of friend function.	4	1
g. Draw and Explain activity diagram.	3	2

Q.3. Structured Question (Attempt any three out of four)

(3×10=30)

a. (i) Explain sequence diagram in detail. (ii) Distinguish between association and aggregation with a suitable diagram.	3	1
b. Explain the following terms: Use Cases, Actors, and Relationships, in respect to the use case diagrams.	3	1
c. Define constructor. Write the characteristics of each type of constructor.	4	2
d. Define inheritance. Also, explain each type of inheritance in detail.	5	2

Q.4. Long Answer / Essay type (Attempt any two out of three)

(2×15=30)

a. (i) Draw a class diagram of a Banking System. (ii) Define and draw an object diagram of a portion of the class diagram of the Banking System.	3	2
b. (i) Write a program to implement multiple inheritance. (ii) Differentiate between public, protected, and public access specifiers.	5	2
c. (i) Write a program to perform function overloading. (ii) Write a program to overload decrement operator (--) operator.	5	2
