



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEGREE CONTINUOUS ASSESSMENT TEST - I, MAY-2025**  
**MA 2208 – PROBABILITY AND QUEUING THEORY**

**SEMESTER: IV**  
**DURATION: 2 HOURS**

**YEAR : II**  
**MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**  
**PART – A**

**(7 x 2= 14)**

1. Define mathematical definition of probability.
2. Find the probability of throwing 10 with two dice.
3. From a pack of 52 cards, one card is drawn at random. Find the probability of getting a queen.
4. A bag contains 8 red and 9 black balls. Find the probability of drawing a red ball.
5. Find the probability that if a card is drawn at random from an ordinary pack, it is a diamond.
6. State the law of addition of probabilities.
7. State Bayes theorem.

**PART – B** **(3 x 4=12)**

- 8.(a) A bag contains 7 white, 6 red and 5 black balls. Two balls are drawn at random. Find the probability that they will both be white.

**(OR)**

- 8.(b) Four persons are chosen at random from a group containing 3 men, 2 women and 4 children. Show that the chance that exactly two of them will be children is  $10/21$ .

- 9.(a) What is the probability that of 6 cards taken from a full pack, 3 will be black and 3 will be red?

**(OR)**

- 9.(b) What is the chance that a leap year selected at random will contain 53 Sundays?

- 10.(a) If  $P(A) = 0.9$ ,  $P(B/A) = 0.8$ , find  $P(A \cap B)$ .

**(OR)**

- 10.(b) If from a pack of cards a single card is drawn, what is the probability that it is either a Spade or a King?

**PART – C** **(2 x 12 = 24)**

- 11.(a) From a group of 4 Indians, 5 Chinese and 6 Tanzanians, a sub-committee of five people is selected by SJUIT. Find the probability that the sub-committee will consists of  
(i) 3 Indians and 2 Chinese  
(ii) 2 Indians, 1 Chinese and 2 Tanzanians  
(iii) 5 Tanzanians

**(OR)**

- 11.(b) Find the probability of drawing a queen and a king from a pack of cards in two consecutive draws, the cards drawn not being replaced.



12.(a) The first bag contains 3 white balls, 2 red balls and 4 black balls. Second bag contains 2 white, 3 red and 5 black balls and third bag contains 3 white, 4 red and 2 black balls. One bag is chosen at random and from it 3 balls are drawn. Out of three balls two balls are white and one red. What are the probabilities that they were taken from first bag, second bag and third bag.

(OR)

12.(b) In a bolt factory machines A, B, C manufacture respectively 25%, 35% and 40% of the total. Of their output 5%, 4% and 2% are defective bolts. A bolt is drawn at random from the produce and is found to be defective. What are the probabilities that it was manufactured by machines A, B and C.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST – I, MAY-2025  
CS 2209 – DESIGN AND ANALYSIS OF ALGORITHM**

**SEMESTER: IV  
DURATION: 2 HOURS**

**YEAR : II  
MAX. MARKS: 50**

**ANSWER ALL QUESTIONS  
PART – A**

**(7 x 2= 14)**

1. What is an algorithm?
2. List any four characteristics that define a good algorithm?
3. Define brute force algorithm.
4. List six fundamental steps of algorithmic problem solving
5. What is backtracking algorithm.
6. Mention four problem types in the realm of algorithmic problem solving.
7. What do you understand by  $O(n \log n)$ ?

**PART – B**

**(3 x 4=12)**

- 8.(a) Discuss the typical stages involved in the functioning of an algorithm.

**(OR)**

- 8.(b) Discuss the advantages and disadvantages of recursive algorithms.

- 9.(a) Compare and contrast linear and binary search algorithms

**(OR)**

- 9.(b) Explain the importance and steps of empirical analysis of algorithms.

- 10.(a) Explain the role of the call stack, mathematical analysis of time and space complexity in recursive algorithms

**(OR)**

- 10.(b) Describe the process of converting a recursive algorithm to a non-recursive version.

**PART – C**

**(2 x 12 = 24)**

- 11.(a) Discuss the importance of analyzing algorithm efficiency.

**(OR)**

- 11.(b) Explain the broad concept of Big  $O(n)$  notation as applied in Algorithm analysis and design. Support your answers with graphs.

- 12.(a) Describe the different types of algorithms based on their strategies.

**(OR)**

- 12.(b) Write C program to execute a binary search algorithm.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST - I, MAY-2025**

**CS 2210- OPERATING SYSTEM**

**SEMESTER: IV**

**DURATION: 2 HOURS**

**YEAR: II**

**PART - A**

**MAX. MARKS: 50  
ANSWER ALL QUESTIONS**

1. What is an operating system (OS)?
2. Write one difference between process and thread?
3. What is process management in an operating system?
5. What are distributed systems?
6. Define a virtual machine?
7. What is the system boot process?

**PART - B**

**(3x4=12)**

- 8(a). Write the advantages and disadvantages of the Shortest Job First (SJF) scheduling algorithm?  
(OR)
- 8(b). Explain the types of thread scheduling?
- 9(a). What is the goal of a good scheduling algorithm? (OR)
- 9(b). What are the basic concepts of process scheduling?
- 10(a). What are the advantages of using threads? (OR)
- 10(b). List the four necessary conditions for deadlock.

**PART - C**

**(2 x 12 = 24)**

- 11.(a). What are the challenges in multiple processor scheduling? (OR)
- 11.(b). What are the common scheduling algorithms in operating systems?
- 12.(a). What are the different multithreading models? (OR)
- 12.(b). Describe the criteria used for process scheduling.

- FCFS  
- SJF  
- RR  
- Round robin  
- Multilevel queue algorithm  
- Multithreaded queue



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST – I, MAY-2025  
EC2211 – MICROPROCESSOR & MICROCONTROLLER APPLICATIONS**

**SEMESTER: II  
DURATION: 2 HOURS**

**YEAR :II  
MAX. MARKS: 50**

**ANSWER ALL QUESTIONS  
PART – A**

**(7 x 2= 14)**

1. What are the operations performed by ALU of 8085?
2. What are the functions of an accumulator?
3. Define flag register.
4. List the segment registers of 8086.
5. List the various string instructions available in 8086.
6. What are the different ways of operand addressing in 8051?
7. What is data pointer (DTPR)?

**PART – B**

**(3 x 4=12)**

- 8.(a) How many machine cycles does 8085 have, mention them.

**(OR)**

- 8.(b) How many types of interrupts are there in 8085? Which interrupt has the highest priority?

- 9.(a) Define Macros. Give an example.

**(OR)**

- 9.(b) What is an assembler directives?

- 10.(a) What is indexed addressing?

**(OR)**

- 10.(b) Compare Microprocessor and Microcontroller.

**PART – C**

**(2 x 12 = 24)**

- 11.(a) Explain the architecture of 8085 microprocessor.

**(OR)**

- 11.(b) Explain the types of instructions in 8085 with example.

- 12.(a) How would you show your understanding of internal hardware architecture of 8086 microprocessor with neat diagram?

**(OR)**

- 12.(b) Explain the types of instructions in 8051 with example.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST - I, MAY-2025**

**CS 2212 –DATABASE MANAGEMENT SYSTEM**

**SEMESTER: IV**

**YEAR: II**

**DURATION: 2 HOURS**

**MAX. MARKS: 50**

**PART – A**

**ANSWER ALL QUESTIONS**

1. What is Normalization in Database Design?
2. What is the purpose of a database system in modern organizations?
3. What are primary keys and foreign keys?
4. What are relational databases?
5. What is SQL and how is it related to database languages?
6. What is a database system?
7. What is a view in a database system?

**PART – B**

**(3X4=12)**

- 8(a). What are the main components of SQL and their functions? (OR)
- 8(b). What are the types of operations used to modify a database?
- 9(a). What are the fundamental relational concepts in database systems? (OR)
- 9(b). What are the set operations in SQL?
- 10(a). What are the differences between ODBC and JDBC? (OR)
- 10(b). What are the main components of a database management system (DBMS)?

**PART – C**

**(2 x 12 = 24)**

- 11(a) What are the advantages and disadvantages of DBMS? (OR)
- 11(b) What are the advantages of using UML in software design?
- 12(a) What are the differences between Specialization and Generalization? (OR)
- 12(b) What are the key steps in the database design process?

- 2  
- Con  
- Eng  
- Man  
- Plan  
- Imp



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST – I, MAY-2025  
ELCS 0003 – GRID & CLOUD COMPUTING**

**SEMESTER: IV  
DURATION: 2 HOURS**

**YEAR :II  
MAX. MARKS: 50**

**ANSWER ALL QUESTIONS  
PART – A**

**(7 x 2= 14)**

1. List the applications of grid computing.
2. Mention any four Middleware resource managers.
3. Explain the importance of layered grid architecture.
4. Mention the application of Kubernetes?
5. Name the categories of specific cloud provisioning.
6. List the actors and roles of a cloud ecosystem.
7. What are the major design goals of cloud architecture?

**PART – B** **(3 x 4=12)**

- 8.(a)Exound the Layered Grid Architecture.  
**(OR)**  
• 8.(b)List any four comparisons between computational and data grids with an example.
- 9.(a)Explain briefly about the NIST characteristics of cloud computing?

**(OR)**  
• 9.(b)Discuss the key technologies that are fundamental to network-based systems.

- 10.(a)Mention any four examples of SAAS & PAAS service models.

**(OR)**

- 10.(b)Write about the design challenges of cloud computing.

**PART – C** **(2 x 12 = 24)**

- 11.(a) Create a virtual organization as “Cloud Computing” and explain their concepts, working and advantages.

**(OR)**

- 11.(b) Discuss the working of Grid Computing in detail.

- 12.(a) Select any one cloud entity/stakeholder you like to perform among the NIST reference architecture in future? Discuss and defend the scenario with examples.

**(OR)**

- 12.(b) Explain the concept of generic cloud architecture and cloud-enabling technologies in hardware, software, and networking.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST - I, MAY-2025  
CECS 0006 – Course for System Administrator**

**SEMESTER: III  
DURATION: 2 HOURS**

**YEAR : II  
MAX. MARKS: 50**

**ANSWER ALL QUESTIONS  
PART – A**

**(7 x 2= 14)**

1. Define Automate Everything .
2. Present unique statement about Procedures.
3. Mention the text editors in Red Hat Enterprise Linux.
4. Express the concept of CentOS.
5. List the Key file System in RHEL.
6. Delineate Linux
7. Depict the tmp

**PART – B**

**(3 x 4=12)**

- 8.(a) Explicate the Communicate As Much As Possible in system administrator.

**(OR)**

- 8.(b) Prepare the example of bank teller

- 9.(a) Explain about the RAID.

**(OR)**

- 9.(b) Expound the update the system in RHEL

- 10.(a) Illustrate the CD command.

**(OR)**

- 10.(b) Describe the options of ls command.

**PART – C**

**(2 x 12 = 24)**

- 11.(a) Explain the concept. of Document Everything in system administrator

**(OR)**

*– Print  
– Paste  
– Change*

- 11.(b) Discuss the concept of Redhat Enterprises Linux

- 12.(a) Analysis the Role of a System Administrator in a Linux environment.

**(OR)**

- 12.(b) Enlighten the basic features of Linux



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**DEGREE CONTINUOUS ASSESSMENT TEST – II, JUNE-2025**  
**MA 2208 – PROBABILITY AND QUEUEING THEORY**

**SEMESTER: IV**  
**DURATION: 2 HOURS**

**YEAR : II**  
**MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**  
**PART – A**

**(7 x 2= 14)**

1. State Binomial distribution.
2. If  $X$  is a Poisson variate such that  $P(X = 1) = \frac{3}{10}$  and  $P(X = 2) = \frac{1}{5}$ ,  
find  $P(X=0)$  and  $P(X=3)$ .
3. State Exponential distribution.
4. Describe population and sample.
5. State F-test.
6. Describe t-test for difference of means.
7. State the formula for expected waiting time in the queue for single server infinite queue length model.

**PART – B**

**(3 x 4=12)**

- 8.(a) Find the moment generating function of the random variable with the probability law

$P(X = x) = q^{x-1} p, \quad x = 1, 2, 3, \dots$  Find the mean and Variance .

(OR)

- 8.(b) In a large consignment of electric bulbs 10% are defective. A random sample of 20 is taken for inspection. Find the probability that

- (i) At most there are 3 defective bulbs
- (ii) Exactly there are three defective bulbs.

- 9.(a) A sample of 26 bulbs gives a mean life of 990 hours with a S.D. of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hours. Is the sample not upto the standard? (Use tabulated value of  $t$  for 25 degrees of freedom at 5% level is 1.708).

(OR)

- 9.(b) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers? (Given tabulated z-value at 5% level of significance is 1.645).

- 10.(a) Check whether the following vectors are probability vectors. If not explain

(i)  $\mathbf{u} = \left( \frac{1}{4}, 0, -\frac{3}{4}, \frac{1}{2} \right)$



(iii)

$$v = \left( \frac{1}{4}, 0, \frac{1}{4}, \frac{1}{2} \right) \\ (\text{OR})$$

10.(b) Show that  $A = \begin{pmatrix} 0 & 1 \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}$  is a stochastic matrix. Check whether it is regular?

**PART - C****(2 x 12 = 24)**

11.(a) A random variable X has a mean  $\mu = 12$  and a variance  $\sigma^2 = 9$  and an unknown probability distribution. Find  $P(6 < X < 18)$ . (Use Chebychev's inequality)

**(OR)**

11.(b) Derive the mean and variance of the geometric distribution?

12.(a) Certain pesticide is packed into bags by a machine. A random sample of 10 bags is drawn and their contents are found to weigh (in kg.) as follows: 50, 49, 52, 44, 45, 48, 46, 45, 49, 45. Test if the average packing can be taken to be 50 kg. (Given tabulated t - value for 9 d.f. at 5% level is 2.262).

**(OR)**

12.(b) For single server finite queue length ( $N = 12$ ) model, customers arrive at a barber shop at the rate of 8 per hour (poisson arrival) and the barber can serve at the rate of 11 per hour (exponential).

- (i) What is the probability that a customer does not join the queue and walks into the barber's chair?
- (ii) What is the probability that there is no queue?
- (iii) What is the probability that there are 8 customers in the system?



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST - I, JUNE-2025  
CS 2209 – DESIGN AND ANALYSIS OF ALGORITHM**

**SEMESTER: II  
DURATION: 2 HOURS**

**YEAR : II  
MAX. MARKS: 50**

**ANSWER ALL QUESTIONS  
PART – A**

**(7 x 2= 14)**

1. What is the key difference between linear search and binary search?
2. Which sorting algorithm uses the divide and conquer technique?
3. Which searching algorithm is inefficient for large datasets and why?
4. What is the worst-case time complexity of Quick Sort and when does it occur?
5. State the n-Queen's problem.
6. What is the Knapsack problem?
7. What is the Traveling Salesman Problem (TSP)?

**PART – B**

**(3 x 4=12)**

- 8.(a) What are the main differences between stable and unstable sorting algorithms?

**(OR)**

- 8.(b) In what scenario is Linear Search preferable over Binary Search?.

- 9.(a) Explain the working principle of Bubble Sort

**(OR)**

- 9.(b) How do approximation algorithms help in solving NP-Hard problems?

- 10.(a) Explain how backtracking is used to solve the n-Queen's problem.

**(OR)**

- 10.(b) Explain how the Branch and Bound technique improves efficiency compared to brute force. Provide an example.

**PART – C**

**(2 x 12 = 24)**

- 11.(a) Develop an algorithm for Binary Search.

**(OR)**

- 11.(b) Design an algorithm to merge two sorted arrays (used in Merge Sort).

- 12.(a) How does Quick Sort differ from Merge Sort in terms of space and performance?

**(OR)**

- 12.(b) Explain the working of Heap Sort algorithm in detail.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST – II, JUNE-2025**

**CS2210-OPERATING SYSTEM**

**SEMESTER: IV**

**DURATION: 2 HOURS**

**YEAR: II**

**MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**

**PART – A**

1. What is the critical-section problem?
2. What are semaphores?
3. What is demand paging?
4. Page Replacement
5. What is mass storage in an operating system?
6. Name any two disk scheduling algorithms.
7. What is disk formatting?

**PART – B**

**(3X4=12)**

8(a). Describe the basic structure of a file system. **OR**

8(b). What are the main components of I/O hardware, and what are their functions?

9(a). What are the different types of failures that require recovery? **OR**

9(b). Explain how I/O requests are transformed into hardware-level operations.

10(a). Explain the concept of demand paging and its advantages. **OR**

10(b). What is copy-on-write? Describe its benefits.

**PART – C**

**(2 x 12 = 24)**

11(a). Explain demand paging and its advantages and disadvantages? **OR**

11(b). Describe in detail the structure of I/O systems in an operating system.

12(a). Explain about semaphores? **OR**

12(b). Describe memory-mapped files and what are their uses?



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST - II, JUNE-2025**

**EC2211 – MICROPROCESSOR AND MICROCONTROLLER APPLICATIONS**

**SEMESTER: II**

**DURATION: 2 HOURS**

**YEAR : II**

**MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**

**PART – A**

**(7 x 2= 14)**

1. Mention the function of the PSW register in 8051.
2. How many ports are there in 8051 and what are their names?
3. Differentiate between ADC and DAC.
4. What is I<sup>2</sup>C Bus?
5. What is pipelining in an ARM processor? Mention its advantage.
6. What is the function of the Program Counter (PC) in an ARM processor?
7. List any two features of ARM architecture.

**PART – B**

**(3 x 4=12)**

- 8.(a) What is DAC? Why is it important to interface a DAC with a microcontroller in embedded systems?

**(OR)**

- 8.(b) List any eight features of the 8051 microcontroller?

- 9.(a) Explain the SPI bus used in microprocessor systems.

**(OR)**

- 9.(b) How the RS 232 serial bus is interfaced to 8051 microcontroller?

- 10.(a) What is the Thumb instruction set in ARM processors? Mention its advantages.

**(OR)**

- 10.(b) List and explain the different conditional flags used in the ARM processor.

**PART – C**

**(2 x 12 = 24)**

- 11.(a) Explain the various addressing modes supported by the 8051 microcontroller. For each addressing mode, describe its operation and provide an example instruction demonstrating its use.

**(OR)**

- 11.(b) Explain how the 8251 USART (Universal Synchronous/Asynchronous Receiver Transmitter) serves as an interface device between the CPU and serial communication channels

- 12.(a) Compare RS-232 and USB communication standards in detail. Explain their architecture, working principles, advantages, disadvantages, and applications.

**(OR)**

- 12.(b) Explain in detail the architecture of ARM Processor. What is an ARM processor and what are the key features and components of its architecture?



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST -II, JUNE-2025**

**CS 2212- DATABASE MANAGEMENT SYSTEM**

**SEMESTER: IV**

**DURATION: 2 HOURS**

**YEAR: II**

**PART - A**

**MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**

1. What is buffer management in DBMS?
2. What is the purpose of a recovery system in DBMS?
3. What is a B+ Tree?
4. What is a remote backup system?
5. What is RAID?
6. Name two types of joins.
7. What is a query tree?

**PART - B**

**(3x4=12)**

8(a). What is UML? How is it used in database design? **(OR)**

8(b). Explain heap and clustered file organization.

9(a). What are primary and secondary indexes? **(OR)**

9(b). Describe the structure and benefits of B+ Trees.

10(a). Explain the ACID properties of a transaction. **(OR)**

10(b). How are transactions implemented in a DBMS?

**PART - C**

**(2 x 12 = 24)**

11(a). Describe the selection operation in query processing and the methods used to improve its efficiency **OR**

11(b). Explain different types of join operations and their performance.

12(a). Define Serializability and Explain Concurrency Control with Lock-based Protocols. **OR**

12(b). Explain Failure with Loss of Non-Volatile Storage and Role of Remote Backup Systems.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST – II, JUNE-2025  
ELCS 0003 – GRID & CLOUD COMPUTING**

**Semester: IV  
DURATION: 2 HOURS**

**YEAR: III  
MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**

**PART – A**

**(7 x 2= 14)**

1. Write about federation clouds.
2. Discuss the cloud that Netflix is utilizing?
3. What are the Hadoop YARN and Hadoop common?
4. Provide a description of the level of abstraction
5. Discuss about the cloudsim framework.
6. Draw the structure of security architecture
7. Define least privilege principle.

**PART – B**

**(3 x 4=12)**

- 8.(a) Discuss the topologies used in inter-cloud architecture  
**(OR)**
- 8.(b) Differentiate cloudsim and openstack platforms.
- 9.(a) Describe the working process of map reduce model with an example  
**(OR)**
- 9.(b) Explain GAE and AWS in detail
- 10.(a) Draw the IAM architecture and explain their components.  
**(OR)**
- 10.(b) Discuss about VMware ESXi in detail

**PART – C**

**(2 x 12 = 24)**

- 11.(a) Discuss the key steps involved in resource provisioning and cloud exchange platforms  
**(OR)**
- 11.(b) Compare the paradigms of parallel and distributed programming with suitable diagrams.
- 12.(a) Discuss about the risk management structure and their importance in detail.  
**(OR)**
- 12.(b) Compare the various types and aspects of security with an example.



**ST. JOSEPH COLLEGE OF ENGINEERING AND TECHNOLOGY  
DEGREE CONTINUOUS ASSESSMENT TEST – II JULY-2025  
CECS 006 – COURSE SYSTEM ADMINISTRATOR**

**SEMESTER: IV**

**YEAR: II**

**DURATION: 2 HOURS**

**MAX. MARKS: 50**

**ANSWER ALL QUESTIONS**

**PART – A**

**(7 x 2= 14)**

1. Provide the syntax for using the rm command
2. Identify any 4 option in ls command
3. Present unique statement about the File Structures
4. Identify the purpose of the seekdir() function in C.
5. Provide the Syntax of w+(write+read)
6. Infer the Inter Process Communication
7. Define Named pipes

**PART – B**

**(3 x 4=12)**

**8.(a) Enlighten the purpose of the cat command in Linux.**

**(OR)**

**8.(b) Provide an example to demonstrate the use of the ln command.**

**9.(a) Define a file system and mention the command used to check the block size in a Unix file system.**

**(OR)**

**9.(b) List the different types of file I/O functions available after opening a file in C**

**10.(a) Explain about the Remote Procedure Calls**

**(OR)**

**10.(b) Write a program for Reading Output from a Command**

**PART – C**

**(2 x 12 = 24)**

**11.(a) Explain the purpose of the a) rm command b) cd command**

**(OR)**

**11.(b) Describe the cp command in Linux and how it is used to copy files and directories.**

**12.(a) summarizes the concepts of files, streams, and file types in C programming**

**(OR)**

**12.(b) Discuss the concept of Semaphores with illustration**