

**RAN-2511001105050001****B.Sc. (IT) (Sem. V) Examination November - 2025****Minor - 2 : Operating System (Paper - 505)****Time: 2 Hours]****[Total Marks: 50****સૂચના : / Instructions**

(1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the above details on your answer book.

Seat No.:

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Student's Signature

Q. 1. Do as directed (Any Five)**(10)**

- (1) Differentiate between internal and external fragmentation.
- (2) Write difference between sequential access and direct access.
- (3) What is spooling?
- (4) What is starvation in scheduling?
- (5) What is multitasking?
- (6) Write any two types of schedulers.
- (7) Discuss swapping and its role in memory management.

Q. 2. A. Answer following questions(Any Two)**(10)**

- (1) Define Operating System and explain its main functions.
- (2) Explain Deadlock Prevention techniques.
- (3) Explain critical section problem in detail.

Q. 2. B. Answer following questions(Any One)**(04)**

- (1) What is Semaphore? Explain in detail.
- (2) Explain Round robin algorithm with example.

Q. 3. A. Answer following questions(Any Two)**(10)**

- (1) If reference string = (7, 5, 3, 2, 5, 3, 7, 2, 4, 3, 5, 2) and frame size = 3, calculate the number of page faults using FIFO and LRU.
- (2) Explain paging with segmentation in detail with diagram
- (3) Explain indexed file allocation method.

Q. 3. B. Answer following questions(Any One)**(04)**

- (1) Elaborate acyclic graph directory structure.
- (2) Describe file attributes with suitable examples.

Q. 4. Answer following question (Any Three)**(12)**

- (1) Solve : Disk with 200 tracks (0-199). Queue = 82, 170, 43, 140, 24, 16, 190. Head = 5. Find total head movement using C-SCAN and LOOK algorithms.
- (2) Explain disk free space management techniques.
- (3) Explain the concept of disk partitioning and its types
- (4) Explain the history and evolution of Operating Systems.