BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-IV CS&E-A&M : WINTER: 2025
SUBJECT: OPERATING SYSTEMS (UE)

Day : Tuesday
Date : 25/11/2025

W-29283-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

NB :
1. All questions are COMPULSORY.
2. Figures to the right indicate FULL marks for the question.
3. Draw neat labelled diagrams WHEREVER necessary.
4. Assume suitable data, if necessary.

Q. 1 What do you understand by USERS perspective of an OPERATING SYSTEMS? (10)

OR

Q. 1 Explain how a Operating systems shell supports a user, and how a KERNAL is associated with hardware of computer systems? (10)

Q. 2 What are the situation that bring a process from RUNNING to WAITING state? Explain in view of following conditions. 1: INTERRUPT occurrence 2: BRANCHING constructs 3: I/O operations. (10)

OR

Q. 2 Compare "MULTI PROGRAMMING", "MULTI THREADING" with "MULTI USER" systems. Also give some suitable example to differentiate. (10)

Q. 3 What do you mean by LONG TERM Scheduler? Define following CPU scheduling parameters .
Arrival time, Burst, and Completion time. (10)

OR

Q. 3 What are the objectives of CPU scheduling algorithm? Can we say that the FCFS is a kind of Priority based algorithm. Give technical reasons to support your answer. (10)

Q. 4 For a program given below, give fork and join construct considering its precedence graph for concurrency. (10)
$A = B+C$
$E = A^2$
$D = A+1$
$F = E+1$
$P = D-1$
$Z = D+1$
$Q = F+P+Z$

OR

Q. 4 Define various variables used and explain concurrent solution for "Producer-Consumer" problem and explain its working. Ensure that the solution is having all required features for concurrency control. (10)

Q. 5 In view of the VIRTUAL MEMORY concept explain the following. PAGING, FRAMES, HIT RATE, PAGE FAULT, DEMAND PAGING and WORKING SET MODEL. (10)

OR

Q. 5 Define Internal and External Memory Fragmentation. Does Pure Paging results Internal fragmentation? Give your opinion with technical reasons. (10)

Q. 6 What do you mean by I-node concept used in file allocation in secondary memory? Give suitable diagrams and explain its working. (10)

OR

Q. 6 An application requires disk access for following BLOCKS. Apply SSTF algorithm and find total seek time. (10)

Disk access requested 14 51 07 23 66 88 10 64 72 99

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