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SEARCH VIT QUESTION PAPERS
ON TELEGRAM TO JOIN

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING (SCOPE)

CAT-I Examination

Fall Semester 2019-20

Programme and Branch: B.Tech – CSE

Max. Marks: 50

Course Code : CSE2005

Slot: F2

Course Title: Operating Systems

Duration: 1.5 hours

Answer ALL Questions (5 X 10 = 50 Marks)

S.No	Answer All Questions	Marks
1	a) Discuss about the main advantage of the microkernel approach to system design? How do user programs and system services interact in a microkernel architecture? Highlight the disadvantages of microkernel approach?	5
	b) With neat sketch describe interrupt-driven I/O. Examine the limitations of interrupt-driven I/O and also elucidate how these limitations could be resolved.	5
2	a) Discuss pros and cons of various types of Operating systems.	5
	b) What is context switching? Draw a diagram to depict context switching in three processes.	5
3	What are system calls? Justify the need of system call with suitable illustration. List out any two Windows and UNIX system calls for the following. i. Process Control ii. File Manipulation iii. Device Manipulation iv. Information Maintenance v. Communication vi. Protection	10
4	a) Draw the process state transition diagram with suspended states.	10
	b) For each of the following transitions between process states, indicate	

whether the transition is possible. If it is possible, give an example of one thing that would cause it.

- (i) Run \rightarrow Ready
- (ii) Run \rightarrow Blocked
- (iii) Blocked \rightarrow Run
- (iv) Run \rightarrow Terminated

c) Write a program to explain child process creation using fork () system call. Which system call prevents the child process from becoming a zombie? Include this system call in your program.

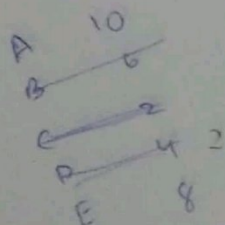
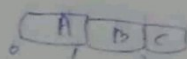
5 a) Explain the functionality of Long-term, Short-term and Mid-term Schedulers. 2

b) Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 10, 6, 2, 4, and 8 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. For each of the following scheduling algorithms, determine the average process turnaround time and average waiting time. Ignore process switching overhead. 8

- i. Round robin
- ii. Priority scheduling
- iii. First-come, first-served
- iv. Shortest job first.

For (i), assume that the system is multiprogrammed, and that each job gets its fair share of 1ms time quantum of the CPU. For (ii) through (iv) assume that only one job at a time runs, until it finishes. All jobs are completely CPU bound.

A=



ABCBDE

EDCBA

A B C D E

E D C B A E

C B A E D

B B B B A E D B E D E A

D A A E B A A E

B A A E