



UNIVERSITY OF THE PUNJAB

Fifth Semester – 2019

Examination: B.S. 4 Years Program

Roll No. in Fig.

Roll No. in Words.

PAPER: Operating Systems (CMP)
Course Code: IT-306 Part-I (Compulsory)

MAX. TIME: 15 Min.
MAX. MARKS: 10

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Signature of Supdt.:

Attempt this Paper on this Question Sheet only.

Please encircle the correct option. Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer, cutting and overwriting is not allowed. (1x10=10)

- I. In shortest job first algorithm CPU schedule process according to the,
 - a. Priority Wise
 - b. Distribute CPU resources equally among processes
 - c. CPU Burst
 - d. All of these
- II. The number of processes completed per unit time is known as _____
 - a) Output
 - b) Throughput
 - c) Efficiency
 - d) Capacity
- III. The degree of multiprogramming is:
 - a) the number of processes executed per unit time
 - b) the number of processes in the ready queue
 - c) the number of processes in the I/O queue
 - d) the number of processes in memory
- IV. If no cycle exists in the resource allocation graph then :
 - a) The system will not be in a safe state
 - b) The system will be in a safe state
 - c) All of the mentioned
 - d) none of the mentioned
- V. An IPC facility provides at least two operations :
 - a) write & delete message
 - b) delete & receive message
 - c) send & delete message
 - d) receive & send message
- VI. Virtual memory is
 - (a) Large secondary memory
 - (b) Large main memory
 - (c) Illusion of large main memory
 - (d) None of the above
- VII. Thrashing occurs when
 - (a) When a page fault occurs
 - (b) Processes on system frequently access pages not memory
 - (c) Processes on system are in running state
 - (d) Processes on system are in waiting state
- VIII. _____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.
 - a. Paging
 - b. Demand paging
 - c. Segmentation
 - d. Swapping
- IX. Swap space exists in:
 - a. primary memory
 - b. secondary memory
 - c. CPU
 - d. none of the mentioned
- X. When a program tries to access a page that is mapped in address space but not loaded in physical memory, then?
 - a. segmentation fault occurs
 - b. fatal error occurs
 - c. page fault occurs
 - d. no error occurs



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Fifth Semester – 2019

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PAPER: Operating Systems (CMP)

Course Code: IT-306 Part – II

MAX. TIME: 2 Hrs. 45 Min.

MAX. MARKS: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Questions with short answers.

(10 x 2 = 20)

- I. What is Convay Effect?
- II. Explain different states of process?
- III. Difference between long-term scheduler and short-term scheduler?
- IV. Explain deadlock conditions?
- V. Define dispatcher latency?
- VI. Define demand paging?
- VII. What is the process address space?
- VIII. Difference between paging and segmentation?
- IX. Define turn-around time?
- X. Define two operations of semaphore?

Q.3. Questions with long answers.

(3 x 10 = 30)

(a) Solve the following question using banker's algorithm?

	ALLOCATION				MAX				AVAILABLE			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	1	0	0	0	5	1	3	1	3	2	2
P1	1	0	0	0	1	2	5	2				
P2	1	0	5	2	2	0	5	2				
P3	0	1	3	1	0	2	5	2				
P4	0	0	1	2	0	3	5	3				

- i. What is the content of the need matrix? (5)
- ii. Is the system in a safe state? (5)

(b) Find the average waiting time using Shortest Remaining time method? (10)

Process	Arrival Time	Burst Time
P1	0.0	7
P2	2.0	4
P3	4.0	1
P4	5.0	4

(c) Given memory partitions of 100K, 600K, 200K, 300K, and 500K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 409K, 236K, 125K, and 514K (in order)?

1. Also define First-fit, Best-fit, and Worst-fit algorithms. (6)
2. Which algorithm makes the most efficient use of memory? (4)