

12) In contiguous memory allocation :

- a. each process is contained in a single contiguous section of memory
- b. all processes are contained in a single contiguous section of memory
- c. the memory space is contiguous
- d. None of these

13) Translation look aside buffer is a

- a) Memory
- b) software
- c) processor
- d) None of the above

14) The internal code of any software that will set off a malicious function when specified conditions are met, is called

- a) logic bomb
- b) trap door
- c) code stacker
- d) none of the mentioned

15) The pattern that can be used to identify a virus is known as

- a) stealth
- b) virus signature
- c) armoured
- d) multipartite

16) Consider a disk queue with requests for I/O to blocks on cylinders :98 183 37 122 14 124 65 67
Considering SSTF (shortest seek time first) scheduling, the total number of head movements is, if the disk head is initially at 53 :

- a) 224
- b) 236
- c) 245
- d) 240

17) Random access in magnetic tapes is _____, compared to magnetic disks.

- a) fast
- b) very fast
- c) slow
- d) very slow

18) pipe() system call

- a. creates a pipe
- b. creates a unidirectional data channel that can be used for interprocess communication.
- c. Returns ZERO on success.
- d. All of the above

19) The protection domain of a process contains

- a) object name
- b) rights-set
- c) both (a) and (b)
- d) none of the mentioned

20) SSTF algorithm, like SJF _____ of some requests.

- a) may cause starvation
- b) will cause starvation
- c) does not cause starvation
- d) causes aging

PART B

Q2 a) What do you mean by process? Describe the process state and Discuss the operation on processes with the help of example. [10 Marks]

OR

b) (i) Describe the differences among short-term, medium-term, and longterm scheduling. [5 Marks]

(ii) Describe the actions taken by a kernel to context-switch between processes. [5 Marks]

Q3 a) Consider the following set of processes, with the arrival times and the CPU burst times given in milliseconds.

Process	Arrival-Time	Burst-Time
P1	0	5
P2	1	3
P3	2	3
P4	4	1

What is the average turnaround time and average waiting time for these processes with the preemptive shortest remaining time , and round robin (time quantum = 2). [10 Marks]

OR

b) (i) Explain the Round-Robin (RR) Scheduling. What will happen if time quanta in RR scheduling will be set as a very large Value? [5 Marks]

(ii) What do you understand by critical section problem? Explain Peterson's solution. [5 Marks]

Q4 a) Write a short note on dead lock prevention methods. [10 Marks]

OR

b) (i) Write Banker's Algorithm of deadlock avoidance. [5 Marks]

(ii) What do you understand by wait-for-graph? Explain with an example. [5 Marks]

Q5 a) What is paging with TLB? Explain with the help of numerical taking one process (P1) with many instructions (I1 to I6). [10 Marks]

OR

b) (i) Explain Segmentation in detail. [5 Marks]

(ii) Explain contiguous memory allocation schemes. [5 Marks]

Q6 a) What do you mean by Access Matrix? Explain methods to implement access matrix in detail. [10 Marks]

OR

b) (i) Explain direct access storage devices with the help of example. [5 Marks]

(ii) What are network threats? [5 Marks]

Time Allowed: 03:00 hrs

Read the following instructions carefully before attempting the question paper.

1. Match the Paper Code shaded on the OMR Sheet with the Paper code mentioned on the question paper and ensure that both are the same.
2. This question paper is divided into two parts A and B.
3. Part A contains 20 questions of 1 mark each. 0.25 marks will be deducted for each wrong answer.
4. Part B contains 5 questions of 10 marks each. In each question attempt either question (a) or (b), in case both (a) and (b) questions are attempted for any question then only the first attempted question will be evaluated.
5. Attempt all the questions in serial order.
6. Do not write or mark anything on the question paper except your registration no. on the designated space.
7. After completion of first 45 minutes, the OMR sheet will be taken by the invigilator.
8. Submit the question paper and the rough sheet(s) along with the answer sheet to the invigilator before leaving the examination hall.

PART A**Q1.**

- 1) If the resources are always preempted from the same process, _____ can occur.
 a) deadlock b) system crash c) aging d) starvation
- 2) A system is in the safe state if
 a) the system can allocate resources to each process in some order and still avoid a deadlock
 b) there exist a safe sequence
 c) Processes have been forcibly terminated.
 d) both (a) and (b)
- 3) Which one of the following is the deadlock avoidance algorithm?
 a) banker's algorithm b) round-robin algorithm c) elevator algorithm d) karn's algorithm
- 4) The larger the block size, the _____ the internal fragmentation.
 a) greater b) lesser c) same d) None of these
- 5) Which of the following memory allocation scheme suffers from external fragmentation?
 a) Segmentation b) Pure demand paging c) Swapping. d) Paging
- 6) Consider a system having m resources of the same type. These resources are shared by 3 processes A, B and C which have peak demands of 3, 4 and 6 respectively. For what minimum value of m deadlock will not occur?
 a) 7 b) 9 c) 10 d) 13
- 7) Match the following:
 List – I
 A. Contiguous allocation
 B. Linked allocation
 C. Indexed allocation
 D. Multi-level indexed
 List – II
 i. This scheme supports very large file sizes.
 ii. This allocation technique supports only sequential files.
 iii. Number of disks required to access file is minimal.
 iv. This technique suffers from maximum wastage of space in storing pointers.

Codes :

	A	B	C	D
(a)	iii	iv	ii	i
(b)	iii	ii	iv	i
(c)	i	ii	iv	iii
(d)	i	iv	ii	iii

- 8) Consider a program that consists of 8 pages (from 0 to 7) and we have 4 page frames in the physical memory for the pages. The page reference string is : 1 2 3 2 5 6 3 4 6 3 7 3 1 5 3 6 3 4 2 4 3 4 5 1
 The number of page faults in LRU page replacement algorithms are (without including initial page faults to fill available page frames with pages) will be?
 a) 11 b) 10 c) 9 d) 14
- 9) A virtual memory based memory management algorithm partially swaps out a process. This is an example of
 (a) short term scheduling (b) long term scheduling
 (c) medium term scheduling (d) mutual exclusion
- 10) Consider a logical address space of 8 pages of 1024 words each, mapped onto a physical memory of 32 frames. How many bits are there in the logical address?
 a) 8 b) 10 c) 12 d) 13
- 11) Assuming a 1 KB page size, what are the page numbers and offsets for the address 2374.
 a) Page = 1 ; offset = 326 b) Page = 1 ; offset = 327 c) Page = 2 ; offset = 326 d) Page = 2 ; offset = 327