b. Explain the banker's algorithm for deadlock avoidance.

31. a. Consider the following page reference string
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
How many page faults would occur for the following page replacement algorithm with frame size 4 and 5. (i) LRU (ii) optimal (iii) FIFO.

(OR)

b. Explain about the memory allocation strategies.

32. a. Explain the various disk scheduling techniques.

(OR)

b. Discuss in detail about various methods for implementing directories.

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Reg. No.															

B.Tech. DEGREE EXAMINATION, NOVEMBER 2015S
Fifth Semester

CS1011 – OPERATING SYSTEMS
(For the candidates admitted during the academic year 2013 – 2014)

Note:
(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.
(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

1. The primary job of an operating system is to:
(A) Command resources (B) Manage resources
(C) Provide utilities (D) Be user friendly

2. Which of the following is single user operating system?
(A) MS-DOS (B) UNIX
(C) LINUX (D) OS/2

3. 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

4. The kernel is _____ of user threads
(A) a part of (B) the creator of
(C) unaware of (D) aware of

5. In a time sharing OS, when the time slot given to a process is completed, the process goes from the running state to the
(A) Blocked state (B) Ready state
(C) Suspended state (D) Terminated state

6. Process state is a part of
(A) Process control block (B) Inode
(C) File allocation table (D) None of the above

7. Thread is _____ process
(A) Heavy weight (B) Inter thread
(C) Multi process (D) Light weight

8. A computer system has 6 tape drives with n process competing for them. Each process may need 3 tape drives. Maximum value of n for which the system is guaranteed to be deadlock free is
(A) 2 (B) 3
(C) 4 (D) 1

9. A minimum number of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
   (A) One (B) Two
   (C) Three (D) Four

10. At a particular time of computation the value of a counting semaphore is 7. Then 20P operations and 15V operations were completed on this semaphore. The resulting value of semaphore is
   (A) 42 (B) 2
   (C) 7 (D) 12

11. 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

12. To avoid dead lock
   (A) There must be a fixed number of resources to allocate (B) Resource allocation must be done only once
   (C) All deadlocked processes must be aborted (D) Inversion technique can be used

13. The _____ is used as an index into the page table
   (A) Frame bit (B) Page number
   (C) Page offset (D) Frame offset

14. A process refers to 5 pages A, B, C, D, E in the order: A, B, C, D, A, B, E, A, B, C, D, E. If the page replacement algorithm is FIFO, the number of page transfers with an empty internal store of 3 frames is
   (A) 8 (B) 10
   (C) 9 (D) 7

15. If there are 32 segments, each of size 1kb, then the logical address should have
   (A) 13 bits (B) 14 bits
   (C) 15 bits (D) 16 bits

16. _____ 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

17. The set of tracks that are at one arm position make up
   (A) Magnetic disks (B) Electrical disks
   (C) Assemblies (D) Cylinders

18. When two users keep a sub directory in their own directories, the structure being referred to is?
   (A) Tree structure (B) Cyclic graph directory structure
   (C) Two level directory structure (D) Acyclic graph directory

19. RAID level _____ is also known as block interleaved parity organization and uses block level striping and keeps a parity block on a separate disk.
   (A) 1 (B) 2
   (C) 3 (D) 4

20. The common security threats are
   (A) File shredding (B) File sharing and permission
   (C) File corrupting (D) File integrity

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

21. Write in brief execution and its steps with examples.

22. Compare user level threads and kernel level threads.

23. What is mutual exclusion? Mention the requirement for mutual exclusion.

24. How deadlock be detected and recovered? Explain.

25. Give examples for first fit, worst fit, best fit strategies for memory allocation.

26. What are the file access methods?

27. Write in brief about kernel I/O subsystem.

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

28. a. What are the system components of an operating system? Explain them.

(OR)

b. Explain in detail about the interrupts and its types.

29. a. Explain in detail about thread and its types.

(OR)

b.i. Explain five state process model with its transition diagram.
ii. Discuss the reasons for process creation and process termination in detail.

30. a. Consider the following five processes, with the length of CPU burst time given in milliseconds

Process	Arrival time	Burst time
A	0	3
B	2	6
C	4	4
D	6	5
E	8	2

Consider the FCFS, non preemptive SJF, round robin (Quantum = 1ms) scheduling algorithms. Illustrate using Gantt chart. Which algorithm will give the minimum average waiting time? Discuss

(OR)