32. a. Describe about the concept of disk scheduling with an example.

(OR)

b. Explain in detail about various file organization and access methods.

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Reg. No.														

B.Tech. DEGREE EXAMINATION, NOVEMBER 2018
3rd to 7th Semester

15CS302J – OPERATING SYSTEMS
(For the candidates admitted during the academic year 2015-2016 to 2017-2018)

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. _____ contains the address of an instruction to be fetched.
(A) Program counter (B) Stack pointer
(C) Index register (D) Instruction register

2. Non-Volatile memory is also referred as _____.
(A) Primary memory (B) Secondary memory
(C) Tertiary memory (D) Off-line memory

3. The central idea behind the simple batch processing scheme is the use of a piece of software known as _____.
(A) Interrupts (B) Timer
(C) Memory protection (D) Monitor

4. Which is responsible for maintaining all the important abstraction of the operating system?
(A) Kernel (B) System libraries
(C) System utilities (D) Daemonus

5. _____ program that switches the processor from one process to another.
(A) Scheduler (B) Dispatcher
(C) Monitor (D) Semaphore

6. When the OS creates a process at the explicit request of other process, the action is referred as _____.
(A) Process creation (B) Process termination
(C) Process spawning (D) Process swapping

7. _____ consists of the contents of processor register.
(A) Processor state information (B) Processor block information
(C) Processor status information (D) Processor control information

8. The event for which a state 'thread is blocked' occurs when.
(A) Thread moves to ready queue (B) Thread completes
(C) A new thread is provided (D) Thread remains blocked

9. The non binary semaphore is often referred to as _____.
   (A) Strong semaphore (B) General semaphore
   (C) Weak semaphore (D) Mutex

10. Which module gives control of the CPU to the process selected by the short-term scheduler?
   (A) Scheduler (B) Monitor
   (C) Dispatcher (D) Interrupt

11. A _____ is one in which there is alteast one sequence of resource allocation to processer that does not result in deadlock.
   (A) Safe state (B) Unsafe state
   (C) Resume state (D) Suspended state

12. A _____ semaphore may only take on the values 0 and 1.
   (A) Binary (B) Strong
   (C) Weak (D) Hexadecimal

13. The operating system maintains _____ for each process.
   (A) Page table (B) Page history
   (C) Page record (D) Page block

14. _____ chooses the block that is closest in size to the request.
   (A) Next fit (B) First fit
   (C) Order fit (D) Best fit

15. _____ words size are available in memory blocks of the buddy system.
   (A) 2^{k+1} (B) 2^{k}
   (C) 2^{k-1} (D) $2^{k/1}$

16. A _____ chooses only among the resident pages of the process that generated the page fault in selecting a page to replace.
   (A) Global replacement policy (B) Local replacement policy
   (C) Logical replacement policy (D) Absolute replacement policy

17. On a movable head system, the time it takes to position the head at the track is known as _____.
   (A) Access time (B) Transfer time
   (C) Seek time (D) Rotational delay

18. Which of the following is not a technique for performing I/O?
   (A) Programmed I/O (B) Interrupt driven I/O
   (C) DMA (D) Device I/O

19. A _____ device stores information in blocks that are usually of fixed size.
   (A) Fixed oriented (B) Block oriented
   (C) Stream oriented (D) Variable oriented

20. Consider a disk queue with request for I/O to block on cylinders: 98, 183, 37, 122, 14, 124, 65, 67. Consider FCFS scheduling, the total number of head moments is, if the disk head initially at 53.
   (A) 600 (B) 620
   (C) 630 (D) 640

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

21. List out the structural elements of a computer to execute a program.

22. List any five reasons to create a new process.

23. Define PCB. Explain the element of PCB.

24. Mention the requirements for mutual exclusion.

25. Define deadlock and explain it with an example.

26. Differentiate paging and segmentation with an example.

27. Define seek time and rotational latency.

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

28. a. Explain in detail about interrupt and different classes of interrupts with neat diagram.

(OR)

b. Justify how evolution of operating system differs in terms of serial, multiprogramming and time sharing system.

29. a. Draw a neat sketch of five state process model and explain it.

(OR)

b. How will you implement threads? Classify and describe in detail.

30. a. Define semaphores and explain the solution in producer consumer problem using semaphores.

(OR)

b. Consider the following five process with the CPU burst time given in Milliseconds

Process	Burst time (msc)
P1	10
P2	29
P3	3
P4	7
P5	12

Consider First Come First Served (FCFS) and Round Robin (RR) (quantum = 3 ms) scheduling algorithm. Illustrate the scheduling using Gannt chart. Which algorithm will give the minimum average waiting time?

31. a. List out the memory partitioning techniques and explain in detail.

(OR)

b. Explain how memory management is done in windows.