31. a. What are the various disk scheduling policies? Explain.

(OR)

b. Explain the various file organizations methods in detail with diagrams.

32. a. Illustrate type of file organization and access.

(OR)

b. What is meant by relocation? With the diagrams clearly explain the need for relocation and its implementation. Give the details of hardware support.

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B.Tech. DEGREE EXAMINATION, NOVEMBER 2016
Fifth Semester

CS1011 – OPERATING SYSTEMS
(For the candidates admitted during the academic year 2013-2014 and 2014-2015)

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. To access the service of operating system, the interface is provided by the
   (A) System calls (B) API
   (C) Library (D) Assembly instructions

2. If a process fails, most operating system write the error information to a
   (A) Log file (B) Another running process file
   (C) New file (D) Exit file

3. Magnetic disk is an example of _____ in memory allocation
   (A) Inbound memory (B) Main memory
   (C) Outboard storage (D) Off line storage

4. In real-time operating system, which is most suitable scheduling scheme
   (A) Round robin scheduling (B) First come first served scheduling
   (C) Pre-emptive scheduling (D) Random scheduling

5. Semaphores are used to solve the problem of
   (A) Race condition (B) Process synchronization
   (C) Mutual exclusion (D) Belady problem

6. Multiprogramming systems
   (A) Are easier to develop than single programming system (B) Execute each job faster
   (C) Execute more jobs in the same time (D) Used only on large main frame computers

7. A thread is
   (A) Lightweight process where the context switching is low (B) Lightweight process where the context switching is high
   (C) Used to speedup paging (D) Used in deadlocks

8. Fragmentation of file system
   (A) Occurs only file is not used properly (B) Can always be prevented
   (C) Happens in all file system (D) No fragmentation

9. Dynamic allocation of storage areas with VSAM files is accomplished by
   (A) Hashing (B) Control splits
   (C) Overflow areas (D) Relative recording

10. Dijkstra's algorithm deals with
   (A) Mutual exclusion (B) Deadlock recovery
   (C) Deadlock avoidance (D) Cache coherence

11. Root directory of a disk should be placed
   (A) At the fixed address in the main memory (B) At a fixed location on the disk
   (C) At the fixed location on system disk (D) Anywhere on the disk

12. Disk scheduling includes deciding
   (A) Which should be accessed next (B) Order in which direct access request must be serviced
   (C) The physical locations of the file (D) The logical location of the file

13. Dirty bit is used to show
   (A) Page with corrupted data (B) Wrong page in memory
   (C) Page that is modified after being loaded in the cache memory (D) Page that is less frequently accessed

14. Fragmentation of a file system occurs when
   (A) File is not used properly (B) Unused space or single file are not contiguous
   (C) Used space is not-contiguous (D) Unused space is non-contiguous

15. To avoid race conditions the number of process that may be simultaneously inside the critical section is
   (A) 12 (B) 3
   (C) 1 (D) 0

16. Removing computing services involved the use of time sharing and
   (A) Multiprocessing (B) Interactive processing
   (C) Real time processing (D) Batch processing

17. The first process launched by the Linux kernel is
   (A) Init process (B) Zombie process
   (C) Boot process (D) Batch process

18. The entry of all the PCBs of the current processes is in
   (A) Process register (B) Process table
   (C) Program counter (D) Process unit

19. In segmentation each address is specified by
   (A) A segment number and offset (B) An offset
   (C) A value (D) A key

20. The process P1 has a period of 50 and a CPU burst of T1=25, P2 has a period of 80 and a CPU burst of 35. The total CPU utilizations.
   (A) 0.90 (B) 0.74
   (C) 0.94 (D) 0.80

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

21. What is an interrupt? How is it handled by operating system?

22. List atleast five reasons for process termination.

23. What are the three conditions that create deadlock?

24. List the services provided by operating system.

25. What is thread synchronization?

26. Consider a logical address space of eight pages of 1024 words each mapped onto a physical memory of 32 frames.

27.i. What is the difference between FSCAN and CSCAN?

ii. What is rotational delay?

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

28. a. Explain the different I/O communication technique.

(OR)

b. Discuss about the evolution of operating system.

29. a. With neat diagram explain the five states involved in process model.

(OR)

b. Explain the various control tables with respect to operating system structure.

30. a. Consider the following set of processes with the length of CPU burst time given in millisecond.

Process	Burst time	Priority
P1	8	3
P2	3	1
P3	4	4
P4	2	2
P5	6	5

Processes are assumed to have arrived in the order P1, P2, P3, P4 and P5 and all at time 0.

(i) Draw M Gantt chart illustrating the executing of those processes using FCFS, SJK, RR (Q=2) scheduling.

(ii) What is turn-around time, waiting time, average waiting time of each process for each of scheduling?

(OR)

b. What is binary semaphore? Explain the algorithm for implementing infinite buffer producer/ consumer problem using binary semaphore.