

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech Summer 2018 - 19 Examination**

**Semester: 3**  
**Subject Code: 03105202**  
**Subject Name: Operating System**

**Date: 27/05/2019**  
**Time: 02:00 pm to 04:30 pm**  
**Total Marks: 60**

---

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Answer all the questions.****(15)**

1. Which one of the following is the address generated by CPU?
  - a) physical address
  - b) absolute address
  - c) logical address
  - d) none of the mentioned
2. Semaphore is a/an \_\_\_\_\_ to solve the critical section problem.
  - a) hardware for a system
  - b) special program for a system
  - c) integer variable
  - d) none of the mentioned
3. The Process Control Block is:
  - a) Process type variable
  - b) Data Structure
  - c) A secondary storage section
  - d) A Block in memory
4. RPC provides a(an) \_\_\_\_\_ on the client side, a separate one for each remote procedure.
  - a) stub
  - b) identifier
  - c) name
  - d) process identifier
5. A parent process calling \_\_\_\_\_ system call will be suspended until children processes terminate.
  - a) wait
  - b) fork
  - c) exit
  - d) exec
6. \_\_\_\_\_ is the phenomenon associated with the FIFO page replacement algorithm.
7. \_\_\_\_\_ is difference between first execution time and arrival time.
8. \_\_\_\_\_ the time taken by the R-W head to reach the desired track from it's current position.
9. Consider a hard disk with:4 surfaces,64 tracks/surface,128 sectors/track,256 bytes/sector.What is the capacity of the hard disk?
- 10.What is a page fault error?
11. Program is loaded into the main memory in linking phase. State (T/F).
12. What is RPC?
13. What is DMA?
14. What are the different types of schedulers?
15. What is a race condition?

**Q.2 Answer the following questions. (Attempt any three)****(15)**

- A) Differentiate between paging and segmentation.
- B) What are the different types of kernel? Explain.
- C) Define a process? Explain the process state transition with a neat diagram.
- D) Consider the following processes with arrival time and burst time. Calculate average turnaround time, average waiting time and average response time using round robin with time quantum 3?

Process id	Arrival time	Burst time
P1	5	5
P2	4	6
P3	3	7
P4	1	9
P5	2	2
P6	6	3

**Q.3** A) Given page reference string: 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 Find the number of page faults for LRU having 4 frames. **(07)**

B) Explain Banker's Algorithm with an example. **(08)**

**OR**

B) Explain IPC problem-Dinning Philosopher's problem. **(08)**

**Q.4** A) Explain FCFS, SSTF, SCAN disk scheduling in detail. **(07)**

**OR**

A) What are the different disk space allocation methods? **(07)**

B) Explain the various directory structure with respect to the file system. **(08)**