15U632 (Pages: 2) Name: ………….……….

Reg. No…………….……

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2018
(CUCBCSS - UG)
CC15U BCS6 B13 - FUNDAMENTALS OF OPERATING SYSTEMS
Computer Science - Core Course
(2015 Admission)

Time: Three Hours   Maximum: 80 Marks

PART A
Answer *all* questions. Each question carries 1 marks.

1. The principal of locality of reference justifies the use of

    (A) re_enterable   (B) non reusable   (C) virtual memory   (D) cache memory

2. No pre-emption is a necessary condition for the occurrence of _____

3. What is page fault?

4. A critical section is a program segment

    (A) which should run in a certain specified amount of time.

    (B) which avoids deadlocks.

    (C) where shared resources are accessed.

    (D) which must be enclosed by a pair of semaphore operations, P and V.

5. To avoid race condition, the maximum number of processes that may be
   simultaneously inside the critical section is

    (A) zero   (B) one   (C) two   (D) more than two

6. The _____ table contains the base address of each page in physical memory.

    (A) Frame   (B) Process   (C) Page   (D) Memory

7. What is hit ratio?

8. The function of Semaphores is to

    (A) synchronize critical resources to prevent deadlock

    (B) synchronize processes for better CPU utilization

    (C) used for memory management

    (D) none of above

9. Number of processes completed per unit time is known as _____

10. Physical memory is broken into fixed sized blocks called _____

(10 x 1 = 10 Marks)

PART B
Answer *all* questions. Each question carries 2 marks.

11. Write notes on file attributes?

12. Explain the functions of a loader.

13. Distinguish logical and physical address?

14. What is authentication?

15. What is Thrashing?   **(5 x 2 = 10 Marks)**

PART C

Answer any *five* questions. Each question carries 4 marks.

16. Discuss the features of Windows NT.

17. How do you recover from a deadlock?

18. Discuss file allocation and free space management?

19. With a neat diagram explain the process life cycle.

20. Explain resource allocation graph in detail?

21. Prove Belady's anomaly using the following reference string:

    1 2 3 4 1 2 5 1 2 3 4 5

22. Discuss the dynamic memory allocation algorithms with examples for each.

    a. First fit

    b. Best fit

    c. Worst fit

23. Explain the basic concepts of multiprogrammed and time sharing systems.

(5 x 4 = 20 Marks)

PART D

Answer any five questions. Each question carries 8 marks.

24. What is Page Replacement? What is the need for page replacement? Explain LRU, optimal and the second chance page replacement algorithm?

25. What is meant by scheduling? Explain in detail with any two scheduling algorithm?

26. What are the different ways of implementing inter process communication?

27. Explain the UNIX OS in detail.

28. Explain classical problems of synchronization?

29. CPU burst time indicates the time, the process needs the CPU. The following are the set of processes with their respective CPU burst time (in milliseconds).

Processes	CPU burst time
P1	10
P2	5
P3	5

    Calculate the average waiting time if the process arrived in the following order:

    (i) P1, P2 & P3   (ii) P2, P3 & P1

30. Explain deadlock detection, prevention with necessary algorithms.

31. Explain demand paging.

(5 x 8 = 40 Marks)

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