C

(Printed Pages 4)

Roll No. _____

18/2664

B.C.A. (Fourth Semester)

Examination, 2018

Second Paper

(Operating System)

Time : Three Hours ***Maximum Marks : 75***

Note: Attempt any **five** questions. **All** questions carry equal marks.

Note: The answers to short questions should not exceed 200 words and the answers to long questions should not exceed 500 words.

1. (a) Explain various resource management modules of the operating systems and their responsibilities in detail. 7½

P.T.O.

(b) Explain the techniques used to prevent deadlock. 7½

2. (a) Explain the different file allocation methods with neat diagrams. Mention their advantages and disadvantages. 7½

(b) Describe the differences among short term, medium-term and long term scheduling. 7½

3. (a) Describe the differences between symmetric and asymmetric multiprocessing. What are the advantages and disadvantages of multiprocessor systems? 7½

(b) Why are segmentation and paging sometimes combined into one scheme? Explain them in detail with an example. 7½

4. (a) Under what circumstances do page faults occur? Describe the actions taken by the operating system when a page fault occurs. 6

(b) Consider the following page reference string 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 4, 5, 3. How many page fault would occur for the following replacement algorithms? Assume four frames and all frames are initially empty. 9

(i) LRU replacement

(ii) FIFO replacement

(iii) Optimal replacement

5. (a) Briefly discuss about the various directory structures. 7

(b) Compare the functionalities of FCFS, SSTF, CSCAN and C-LOOK disk scheduling algorithms with an example for each. 8

6. (a) Discuss process synchronization. Illustrate any two classical problems of synchronization. 7½

(b) What is a critical section? Discuss the solution of the critical section problem. 7½

7. (a) Explain deadlock avoidance process using Banker's algorithm. 7½

(b) Explain the purpose and importance of system calls in detail with examples. 7½

8. Write short notes on: 5+5+5

(a) Thrashing

(b) Swap-space management

(c) Distributed systems.