Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EC-7005(3)-CBGS

B.E. VII Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Operating Systems

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What is an operating system? Discuss evolution of operating system.
   b) Discuss operating system services.

2. a) Explain all the steps in Banker's algorithm. How do you select a victim process to abort a process while recovering from a deadlock?
   b) What is resource allocation graph? What is the necessary and sufficient condition for occurrence of a deadlock?

3. a) Explain Disk and Drum Scheduling.
   b) Discuss I/O devices and I/O buffering.

4. a) The CPU should be in the kernel mode while executing the kernel code and in the user mode while executing a user program. Explain how it is achieved during operation of an OS?
   b) Give a solution for readers-writers problem using semaphore.

5. a) Write in details about file attributes, operation, types and structure.

   b) Briefly explain the different modes of inter-process communication.

6. a) What do you mean by virtual memory? Consider the following page reference string:

   2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3

   How many page faults occur for the following page replacement algorithms assuming four frames?

   i) LRU replacement

   ii) FIFO

   iii) Optimal replacement.

   b) There is a paging system with 64 pages of 512 bytes page size and a physical memory of 32 frames. How many bits are required in the logical and physical address?

7. What are process and threads? What are the advantages and disadvantages of implementing threads in Kernal space and user space.

8. Write short notes on any two:

   i) Computer virus

   ii) Virtual memory

   iii) Batch processing

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