



**WEST BENGAL STATE UNIVERSITY**  
B.A./B.Sc. Honours 3rd Semester Examination, 2020, held in 2021

**CMAACOR06T-COMPUTER APPLICATION (CC6)**

**OPERATING SYSTEM**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

**Answer Question No. 1 and any four from the rest**

1. Answer any **four** questions from the following: 2×4 = 8
- (a) What is thread?
  - (b) Why SJF scheduling is called special case of Priority Scheduling?
  - (c) What is distributed operating system?
  - (d) In which situation a process can directly go back to the ready queue again from the active state without going through waiting queue?
  - (e) What is segmentation?
  - (f) Write down the difference between physical address and logical address.
  - (g) What is the need of Counting Semaphore while we are already having Binary Semaphore?
2. (a) What is deadlock? 2
- (b) What is the difference between a program and a process? 2
- (c) Write down the necessary condition for deadlock occurrence. 4
3. (a) What do you mean by critical section? What are the conditions that should be maintained for any solution of critical section problem? 1+2
- (b) Describe the Peterson's Two Process solution and check whether the constraints for the solution of a critical section problem have been maintained or not and how. 5
4. (a) Write a short note on paging describing the hardware architecture that will be needed to maintain for paging. 3
- (b) What is the need of segmentation while you are actually having paging? Explain with an example. 2
- (c) Describe internal and external fragmentations using examples. 3

5. (a) What is Belady's Anomaly? 2  
(b) Calculate the number of page faults occurring in case of both LFU and LRU when you are using the frame size 3 for the following requests: 2+2  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2  
(c) What is the limitation of LFU page replacement algorithm? 2
6. (a) Solve the producer-consumer problem by using counting semaphore. 5  
(b) What is thrashing? 1  
(c) What are the two ways of happening external fragmentation for variable length partitions? 2
7. (a) What are system calls? 2  
(b) Explain different categories of system calls. 2  
(c) Explain PCB. 4
8. (a) Explain process state diagram. 2  
(b) What is client server system and peer to peer system? 2  
(c) Explain demand paging. 4

**N.B. :** *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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