



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Information and Communication Technology
Third Year - Semester II Examination – July / August 2020**

ICT3213 – ADVANCE OPERATING SYSTEMS

Time: Two (02) hours

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- Each question carries equal marks.
 - Answer any **FOUR (04)** questions.
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1.
 - a) Discuss the states a process may be in during its lifetime. **(05 marks)**
 - b) What are the requirements for a blocked process to be unblocked? **(05 marks)**
 - c) Explain why sleep and wakeup is more desirable than busy waiting in interprocess communication. **(05 marks)**
 - d) Discuss why non-preemptive scheduling does not introduce race conditions among multiple processes. **(10 marks)**
2.
 - a) What are the problems that can occur in swapping processes between the main memory and virtual memory? **(05 marks)**
 - b) Briefly explain paging used in virtual memory systems. **(10 marks)**
 - c) Differentiate a minor page fault from a major page fault. **(05 marks)**

- d) What is *thrashing* in paging systems? How can thrashing be reduced? (05 marks)
3. a) What are the drawbacks of contiguous allocation of disk blocks for files? (05 marks)
- b) Briefly discuss the problems introduced by shared files. (05 marks)
- c) What are the features of log-structured file systems? (10 marks)
- d) Explain the functions of a virtual file system. (05 marks)
4. a) Explain how an interrupt is handled by the processor. (10 marks)
- b) Discuss deadlock recovery methodologies. (10 marks)
- c) What are the conditions for deadlocks that can be prevented? (05 marks)
5. a) What are sensitive instructions and privileged instructions of a CPU? (05 marks)
- b) Explain different types of hypervisors. (10 marks)
- c) Briefly discuss memory virtualization. (05 marks)
- d) Discuss how input / output virtualization is achieved. (05 marks)

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