



RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. in Information Technology
Third Year - Semester II Examination – January/ February 2023

ICT3213 – ADVANCE OPERATING SYSTEMS

Time: Two (02) hours

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- Answer **ANY FOUR (04)** questions.
 - Each question carries equal marks.
 - This paper contains **FIVE (05)** questions in **TWO (02)** pages.
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1. a) Discuss the use of the three schedulers involved in process scheduling. (10 marks)
b) When and how is a process blocked? (05 marks)
c) Discuss the problems of busy waiting in interprocess communication. (05 marks)
d) Explain what is a race condition and how can a race be avoided. (05 marks)
2. a) What are the major concerns in deciding the page size in a virtual memory system? (05 marks)
b) Discuss the function of the page table using appropriate examples. (10 marks)
c) Discuss how the working set of pages is identified. (10 marks)

3. a) "In a file system, a large block size wastes space while a small block size wastes time." Do you agree with this statement? Justify your answer. (10 marks)
- b) Discuss how journaling increases reliability of a file system. (05 marks)
- c) Discuss the two types of consistency checks performed on a file system. (10 marks)
4. a) Discuss how direct memory access (DMA) works. (10 marks)
- b) Elaborate how interrupt-driven input/output works. (05 marks)
- c) What is a "safe state" in allocating resources to processes? (05 marks)
- d) Explain the Banker's Algorithm as used in deadlock prevention. (05 marks)
5. a) What are the conditions for virtualization? (05 marks)
- b) Explain how nested page tables are used in memory virtualization. (05 marks)
- c) Briefly discuss the use of system calls. (10 marks)
- d) Discuss when remote procedure calls are used. (05 marks)

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