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RCSE-008

Ph.D. IN COMPUTER SCIENCE (PHDCS)

Term-End Examination

00330

December, 2017

RCSE-008 : ADVANCED OPERATING SYSTEMS

Time : 3 hours *Maximum Marks : 100*

(Weightage : 50%)

Note : *Question no. **1** is **compulsory**. Answer any **three** questions from the rest.*

1. (a) Define a Process. Mention the process management functions of operating systems. With the help of a diagram, list and explain the various process states. *10*

(b) Write and explain the Banker's Algorithm for Deadlock Avoidance. Illustrate the algorithm with an example. *10*

(c) Describe the memory management scheme used in Android or Unix operating system. Identify the hardware support needed for efficient implementation of the scheme. *10*

(d) Explain any two laws to measure the speed-up performance of parallel computers. *10*

2. (a) What is a Task ? Explain Periodic, Aperiodic and Sporadic tasks with the help of an example for each. *10*

(b) Mention and explain the design issues in Distributed operating systems. *10*

3. (a) Write and explain the solution for Sleeping-Barber's synchronization problem, using monitors. *10*

(b) What is a Computer Cluster ? Why is cluster computing required ? Explain the architecture of Beowulf Cluster. *10*

4. (a) Differentiate between SAN and NAS with the help of a block diagram. Explain the architecture and all the layers of a SAN including associated protocols. *10*

(b) A computer system has 6 tape drives with "n" processors competing for them. For which value of "n" is the system deadlock-free ? Show the complete calculation. *10*

5. (a) Compare and contrast the following : *10*

(i) RTOS vs O/S for a PC

(ii) Temporal vs Data Parallelism

(b) Explain Lamport's Algorithm for handling mutual exclusion in distributed systems. Also analyze its performance. *10*
