

**Ph.D. IN COMPUTER SCIENCE
(PHDCS)**

00295 **Term-End Examination**

June, 2018

RCSE-008 : ADVANCED OPERATING SYSTEMS

Time : 3 hours

Maximum Marks : 100

Weightage : 50%

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

1. (a) Define a Real Time System. Explain different types of real time systems. Discuss the reference model of a real time system. 10
- (b) Consider a logical space of 32 pages with 1024 words per page (word size = 16 bits), mapped onto a physical memory of 16 frames. Assume frame size = 2 KB. 10
 - (i) How many bits are required in the logical address ?
 - (ii) How many bits are required in the physical address ?
- (c) How do parallel computer systems differ from personal computer systems ? Explain the speed-up and efficiency of parallel computer systems. 10

- (d) Define Grid Computing. How is this different from Cluster Computing? With the help a block diagram, explain all the layers of Grid architecture. 10
2. (a) Compare and contrast between Cluster, Grid and Cloud computing. Mention challenges in each paradigm. Also list two applications for each. 10
- (b) Discuss the booting process of the following OS : 5
- (i) iOS
- (ii) Linux
- (c) What is a distributed system? Explain general properties of distributed systems. 5
3. (a) Compare and contrast the following : 10
- (i) X86 and ARM architectures
- (ii) RTOS and Time sharing systems
- (b) Consider the following segment table : 10

Segment	Base	Length
0	256	900
1	1200	77
2	900	100
3	1547	380
4	52	100

What are the physical addresses for the following :

- (i) 0,730
- (ii) 1,90
- (iii) 2,500
- (iv) 3,200
- (v) 4,100

4. (a) Explain the process management in any **one** of the following : 10

- (i) Android
- (ii) Windows 2000
- (iii) Linux

(b) Explain the Havender's Algorithm for Deadlock prevention. 10

5. Write short notes on any **four** of the following : 4×5=20

- (a) One Simulation Tool (Grid, Cloud)
 - (b) Architecture of Parallel Computer
 - (c) Distributed Scheduling
 - (d) Semaphores
 - (e) Virtual Memory
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