

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

MCA (2012 & Onwards) (Sem.-4)
ADVANCED OPERATING SYSTEMS

Subject Code : MCA-404

Paper ID : [A2558]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **SECTIONS-A, B, C & D contains TWO questions each carrying TWENTY marks each and students has to attempt any ONE question from each SECTION.**
2. **SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.**

SECTION-A

1. What is a Multi-processor operating system? Discuss the general architecture of a multi-processor operating system.
2. What is a Distributed file system? Explain how a distributed file system solves read-write conflicts on a file that is shared between multiple readers and only a single writer.

SECTION-B

3. What is a Real-time operating system? Discuss and differentiate between Nanokernel and Microkernel based architectures.
4. How do you classify real-time tasks into different types? Discuss and compare each.

SECTION-C

- What is a Cluster? Differentiate between closed clusters and Open clusters. Discuss the motivations for cluster computing.
- Describe in detail the Grid architecture.

SECTION-D

7. What is Virtualization? How virtualization is different from cloud computing? Discuss the Hypervisor architecture in brief.
8. Define Mobile computing. What are the application areas of mobile computing? Discuss the features of IOS.

SECTION-E

9. Write briefly :

- a) What is clock synchronization in distributed systems?
- b) Define fault tolerance in distributed systems.
- c) What is mutual exclusion?
- d) What are the benefits of using grid compared with computations on a local computer?
- e) What is KVM?
- f) What are the hardware elements of embedded operating systems?
- g) Explain energy aware CPU scheduling in real-time and embedded operating systems.
- h) Write the features of MOSIX operating system.
- i) How performance analysis of grid computing is performed?
- j) What are the building blocks of Cloud?