

**MCA ,SEM 4<sup>TH</sup> –2014**  
**ADVANCED OPERATING SYSTEM**  
**Paper Code (MCA-404)**  
**Paper Id. [A2558]**

*Time Allowed: 3 hours**Max Marks: 100*

**SECTION-A**

- 1) Explain general architecture of multiprocessor and the distributed Operating systems. Explain fault tolerance issues in Distributed systems. (20)
- 2)
  - a) How a distributed file system solves read-write conflicts on a file that is shared between multiple readers and only a single writer?
  - b) Discuss the problems in performing mutual exclusion (mutex) in distributed systems, and explain any one mutex algorithm. (10, 10)

**SECTION-B**

- 3) Differentiate between Real-time OS and an Embedded OS. With the help of neat diagram, name and explain the most preferred scheduling technique used in RTOS. Also state the worst case latency for the same. (20)
- 4) Explain the following:
  - a) Hardware elements of Embedded Systems
  - b) Micro kernel OS versus Monolithic OS (10, 10)

**SECTION-C**

- 5) Explain the elements of Cluster computing systems. What are the design considerations of Cluster computing? Write any four applications where Cluster computing is used. (20)
- 6) Explain the following
  - a) Goal of Grid scheduling
  - b) MOSIX OS (10, 10)

**SECTION-D**

- 7) Explain the word "Mobile Computing" and also give any suitable live example with merit of mobile computing. Explain features of IOS used in mobile devices. Explain it by giving suitable examples. (20)
- 8)
  - a) Define cloud computing and discuss its essential characteristics. State the business benefits and risks associated with cloud computing.
  - b) Differentiate between cloud as SaaS and cloud as IaaS, with examples. (10, 10)

**SECTION-E (Compulsory Question)**

- 9)
  - a) Name two algorithms for clock synchronization in distributed systems.
  - b) Compare Grid computing with Cluster computing.
  - c) What is SAN?
  - d) Explain the goal of distributed file systems.
  - e) What is the use of optical devices in embedded Systems?
  - f) What is Inter-Process Communication (IPC)? Why is it needed?
  - g) What does the interrupt controller do?
  - h) What is the difference between periodic and aperiodic tasks?
  - i) Name two Operating Systems used in mobile devices.
  - j) What is software virtualization? (10x2=20)