

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.
3. Use of non-programmable **scientific calculator** is allowed.

**SECTION-A**

1. Explain the similarities and differences between multiprocessor and distributed operating system.
2. What is inter process communication? Discuss various design challenges in distributed operating system with reference to distributed applications.

**SECTION-B**

3. What is a kernel? Compare and contrast micro kernel and monolithic kernel based models of operating system with examples.
4. Discuss in detail periodic, aperiodic and sporadic task based scheduling with example. Write a note on the concept of energy aware CPU scheduling.

**SECTION-C**

5. What is a Grid? Discuss in detail the Grid architecture. Write a note on Grid Scheduling.
6. Discuss major application areas of cluster computing with real life examples. Explain various functionalities of MOSIX operating system.

## SECTION-D

7. Discuss various building blocks of clouds. What is virtualization of operating system? Compare hypervisor KVM and SAN & NAS backend concepts.
8. What is Mobile Computing? Explain various design principles of mobile computing. Discuss the architecture of any one mobile operating system.

## SECTION-E

### 9. Explain briefly :

- a. What is the concept of load balancing?
- b. List various operating systems for mobile devices.
- c. What are the goals of distributed file systems?
- d. Define Cloud Computing.
- e. Highlight the need of fault tolerance?
- f. What is the concept of logical clock?
- g. Quote the significance of Grid monitoring.
- h. Define cloud as PaaS.
- i. What is the role of network interfaces in Grid?
- j. List main applications of cloud computing.