

SN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

First Semester M.Tech. Degree Examination, Dec.2015/Jan.2016

Advances in Operating Systems

Max. Marks:100

Time: 3 hrs.

Note: Answer any FIVE full questions.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 1 a. What are the three objectives of an operating system design? Briefly explain the typically provided services of an operating system. (10 Marks)
- b. Draw the General structure of operating system control Tables and explain each table. (10 Marks)
- 2 a. Explain the UNIX – SVR4 process states with a neat diagram. (10 Marks)
- b. List and explain five storage management responsibilities of a typical OS. (10 Marks)
- 3 a. Explain the key design issues for an SMP operating system. (10 Marks)
- b. What are the two sorts of policies of Resident set management? Explain it in relation with replacement scope. (10 Marks)
- 4 a. Explain the benefits of a microkernel organization. (07 Marks)
- b. Explain the advantages of segmentation to the programmer over a non segmentation address space. (08 Marks)
- c. What are the requirements for supporting the mutual exclusion? (05 Marks)
- 5 a. Explain the five general areas of requirement for a real – time operating system. (10 Marks)
- b. Explain in detail the Linux real – Time scheduling classes, along with draw backs. (10 Marks)
- 6 a. Define the two types of Distributed dead lock. (04 Marks)
- b. Discuss some of the key characteristics of an embedded operating system. (08 Marks)
- c. Explain the interfaces to a client, provided by the Tiny OS shared resource. (08 Marks)
- 7 a. Explain the characteristics exhibited by botnet. (10 Marks)
- b. Explain the windows NT Trap Handles with a block diagram. (10 Marks)
- 8 a. Explain the different mechanisms by which a user process can perform IPC using the Kernel. (08 Marks)
- b. Write a note on operation of an Input/Output manager. (04 Marks)
- c. With a neat diagram, explain the Task control flow in the Kernel. (08 Marks)

USN

--	--	--	--	--	--	--	--	--	--

14SCS/SCE12

First Semester M.Tech Degree Examination, Dec.2015/Jan.2016
Cloud Computing

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

1. a. With a block diagram, explain cloud computing reference models and services. (10 Marks)
b. Discuss some of the ethical issues in cloud computing. (05 Marks)
c. What are the major challenges faced in cloud? (05 Marks)
2. a. With a block diagram, explain AWS management console offered by Amazon. (12 Marks)
b. How does windows Azure support cloud services? Justify with suitable diagram. (08 Marks)
3. a. Google provides certain services in cloud environment. Discuss in terms of SaaS and PaaS. (06 Marks)
b. Discuss some of the user experiences with cloud computing. (04 Marks)
c. Explain the case study of the Grep The Web application. (10 Marks)
4. a. Briefly explain architectural styles used in cloud applications. (04 Marks)
b. Differentiate between various types of applications running on cloud. (06 Marks)
c. Differentiate between workflows and program using a suitable diagram. (06 Marks)
d. Write a note on security rules for application and transport layer protocols in EC2. (04 Marks)
5. a. Discuss the significance of hypervisor in cloud. (04 Marks)
b. Differentiate between full virtualization and paravirtualization. (06 Marks)
c. Explain the case study of XEN hypervisor with suitable diagrams. (10 Marks)
6. a. Elucidate the problems faced by virtualization of x86 architecture. (10 Marks)
b. Explain how control theory principles and queuing model enables one to design task scheduling on a cloud. (10 Marks)
7. a. How does combinatorial auctions and ASCA combinatorial auctions allocates resources in cloud? (10 Marks)
b. Explain the security risks faced by cloud users. (10 Marks)
8. a. Write a note on trust in the context of cloud computing. (05 Marks)
b. Explain how security is achieved in :
i) Operating system security.
ii) VM security.
iii) Security of virtualization.
iv) Security risks posed by shared images.
v) Security risks posed by management OS. (10 Marks)
c. Write a note on service for adaptive data streaming and cloud based optimal FPGA synthesis. (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

USN

--	--	--	--	--	--	--	--	--	--

14SCS14

First Semester M.Tech. Degree Examination, Dec.2015/Jan.2016
Multi Core Architecture and Programming

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

1.
 - a. Distinguish concurrency and parallelism, and discuss the approaches adopted to support thread-level parallelism, both in software and hardware. (06 Marks)
 - b. Explain Hyper-Threading Technology and with a block diagram, also explain the multi-core with Hyper – Threading Technology processor architecture. (10 Marks)
 - c. Distinguish runtime virtualization and system virtualization. (04 Marks)
2.
 - a. Discuss the four types of problems to be addressed when multi threading is used in programs. (04 Marks)
 - b. Explain the common parallel programming patterns. (10 Marks)
 - c. How to transform the basic error diffusion algorithm into an approach that is more conducive to a parallel solution? (06 Marks)
3.
 - a. What is synchronization? Explain the widely used two types of synchronization operations. (05 Marks)
 - b. Discuss the various lock types. (05 Marks)
 - c. Explain message passing model. (10 Marks)
4.
 - a. How does AfxBeginThread() differs from createThread()? (05 Marks)
 - b. Why should developers be careful when calling suspendThread()? How to safely suspend threads? (05 Marks)
 - c. Explain the concept of thread pool with an example in .NET. (10 Marks)
5.
 - a. Explain user-level threading package offered by windows called fibers. (10 Marks)
 - b. What is pthread? Explain with an example, how to create and use threads with pthreads. (10 Marks)
6.
 - a. In OpenMP, what are the different ways the memory can be declared as private? (04 Marks)
 - b. What are the clauses provided by OpenMP standard to accomplish the data copy in and copy out operations? (04 Marks)
 - c. Describe the four most heavily used OpenMP library functions. (08 Marks)
 - d. List the factors that threaded application performance with OpenMP is largely depended upon. (04 Marks)
7.
 - a. Explain critical and atomic programs supported by OpenMP standard with an example. (10 Marks)
 - b. Explain the task queuing execution model. (10 Marks)
8.
 - a. Explain convoying and priority inversion in parallel programming. (06 Marks)
 - b. What are non-blocking algorithms? Discuss its advantages and disadvantages. (06 Marks)
 - c. How do you conserve memory bandwidth and avoid memory contention in multi-core processors? (08 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

USN

--	--	--	--	--	--	--	--	--	--

14SCS152

First Semester M.Tech. Degree Examination, Dec.2015/Jan.2016
Advances in Storage Area Networks

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

1. a. Describe with a neat diagram, how storage centric IT architecture can overcome the limitations of server-centric IT architecture. (08 Marks)
b. Define the 2 goals of RAID. Explain the use of hot spare disk in RAID. (08 Marks)
c. Explain :
 - i) Write cache in controller of disks
 - ii) Read cache in controller of disks. (04 Marks)
2. a. Explain RAID0+1/RAID 10 techniques. Why RAID0 is not an option for high availability? Give reasons. (10 Marks)
b. Explain service classes and login techniques of fibre channel protocol stack. (10 Marks)
3. a. With neat diagram, explain NAS hardware components. (08 Marks)
b. Bring out the performance bottlenecks in file servers and also explain how data access acceleration is done in NFS. (08 Marks)
c. Write a short note on shared disk file system. (04 Marks)
4. a. Explain briefly general requirements and considerations for implementation of virtualization. (10 Marks)
b. What is symmetric and asymmetric storage virtualization? Write its advantages and disadvantages. (10 Marks)
5. a. Briefly explain storage virtualization in block or file level, with necessary diagram. (10 Marks)
b. Explain fibre channel switch. (10 Marks)
6. a. With diagram, describe the basic functions of FC Host Bus Adapter. And also explain how it plays a critical role in interoperability. (10 Marks)
b. Describe the components of switch operating system, in detail. (10 Marks)
7. a. With a neat diagram, explain the architecture of simple network management protocol and its operations. (07 Marks)
b. Discuss the 5 core components required for management of storage networks. (05 Marks)
c. Explain:
 - i) Common Information Model (CIM)
 - ii) Web Based Enterprise Management (WBEM) (08 Marks)
8. Write a short note on :
 - a. LUN Masking
 - b. Volume Manager
 - c. Device Drivers
 - d. IP Storage (20 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.