



- b) What is a security infrastructure? How it is different from data security? (5)
- Q4 a)** Consider two cloud service systems: Google file system and Amazon S3. Explain how they achieve their design goals to secure data integrity and to maintain data consistency while facing the problems of hardware failure, especially concurrent hardware failures. (10)
- b)** Explain the differences between hypervisor and para-virtualization and give one example of virtual machine monitor that was built in each of the two categories. (5)
- Q5 a)** Compare the similarities and differences between traditional computing grids/clusters and the computing clouds launched in recent years. Consider all technical and economic aspects as listed below. Answer the following questions against real example systems or platforms built in recent years. Also discuss the possible convergence of the two computing paradigms in the future. (10)
- (i) Hardware, software and networking support
 - (ii) Resource allocation and provisioning methods
 - (iii) Infrastructure management and protection
 - (iv) Support of utility computing services
 - (v) Operational and cost models applied.
- b)** Define and distinguish among the following terms on scalability: (5)
- (i) Scalability over machine size
 - (ii) Scalability over problem size
 - (iii) Resource scalability
 - (iv) Generation scalability.
- Q6 a)** Compare and contrast various cloud computing platforms. (10)
- b)** What is meant by auditing in cloud computing? What is compliance in cloud? Explain the audits and compliance requirements for cloud computing. (5)

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