CSE423:VIRTUALIZATION AND CLOUD COMPUTING

Course Outcomes: Through this course students should be able to

CO1 :: Illustrate the main concepts, key technologies, strengths of Virtualization technology

CO2 :: Examine the appropriate technologies, algorithms, and approaches for provisions of cloud computing

CO3 :: Formulate the core issues of cloud computing such as security, privacy, and interoperability

CO4 :: Evaluate the appropriate cloud computing solutions and recommendations according to the applications used

CO5 :: Enumerate the emerging areas of cloud computing and how it relates to traditional models of computing

CO6 :: Understand the service attributes for compliance with enterprise objectives

Unit I

Virtualization techniques : virtualization technology, overview of x86 virtualization, types of virtualization, virtualization products, cloud interoperability standards, concept of VLAN ,VSAN and benefits

Virtualized environment : characteristics of virtualized environment, taxonomy of virtualization techniques, pros and cons of virtualization, virtualization and cloud computing

Unit II

Introduction to Cloud Computing : Cloud Computing in a Nutshell, Roots of Cloud Computing., Defining Cloud Computing, cloud types, Trends in cloud computing

Fundamentals of cloud computing : Roles and Boundaries, Cloud characteristics, Risk and challenges, Moving applications to cloud

Unit III

Understanding cloud architecture : exploring the cloud computing stack, connecting to cloud, Workload distribution architecture, Capacity planning, Cloud bursting architecture, Disk provisioning architecture, Dynamic failure detection and recovery architecture

Cloud mechanisms : Automated scaling listerner, Load balancer, Pay-per-use monitor, Audit monitor, SLA monitor, Fail-over Systems, Resource Cluster

Understanding applications by type : Infrastructure-as-a-service, Software-as-a-service, Platform-as-a-service, Identity-as-a-service, Compliance-as-a-service

Unit IV

Exploring Cloud Infrastructures : Managing the Cloud, Understanding Cloud Security, Service oriented architecture, Service level agreements, Licensing models, Cloud economics

Unit V

Working with cloud based storage : measuring the digital universe, provisioning cloud storage, exploring backup plan solutions, Data management in cloud

Cloud security : Risks and threats, Security mechanisms, Vulnerability checklist

Unit VI

Container technology : Introduction to containers, container architectures, Docker containers, Kubernetes

Exploring cloud applications : Analytics services, Content delivery services, Deployment and management services, Application services, Identity & access management services, Storage services, Green cloud, Cloud mashups, Monitoring services, Fog computing, Edge Computing

Text Books:

1. CLOUD COMPUTING BIBLE by BARRIE SOSINSKY, WILEY

References:

1. CLOUD COMPUTING (FUNDAMENTALS,INDUSTRY APPROACH AND TRENDS by RISHABH SHARMA, WILEY

2. MASTERING CLOUD COMPUTING by RAJKUMAR BUYYA,CHRISTIAN VECCHIOLA ,S.THAMARAI SELVI, MCGRAW HILL EDUCATION