Cloud Computing

Course Code: **MCA- 223** **L T C**
Course Name: **Cloud Computing** **3 1 4**

INSTRUCTIONS TO PAPER SETTERS:

1. Question No. 1 should be compulsory and cover the entire syllabus. There should be 10 questions of short answer type of 2.5 marks each, having at least 2 questions from each unit.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions to evaluate analytical/technical skills of candidate. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks, including its subparts, if any.
3. Examiners are requested to go through the Course Outcomes (CO) of this course and prepare the question paper accordingly, using Bloom's Taxonomy (BT), in such a way that every question be mapped to some or other CO and all the questions, put together, must be able to achieve the mapping to all the CO(s), in balanced way.

LEARNING OBJECTIVES:

In this course, the learners will be able to develop expertise related to the following:-

1. Cloud Computing Basic concepts and its applications.
2. Virtualization and its role in the implementation of cloud computing.
3. Data centre overview and its architecture.
4. Popular public clouds and their features.
5. Security issues in cloud and available countermeasures.

PRE-REQUISITES:

1. Computer Networks
2. Linux
3. Programming in Web Technologies / Full Stack Development

COURSE OUTCOMES (COs):

After completion of this course, the learners will be able to:-

CO #	Detailed Statement of the CO	BT Level	Mapping to PO #
CO1	Identify the importance of Cloud Computing Paradigm, Cloud Security primitives & Load Configurations.	BTL3	PO1, PO2
CO2	Model and apply the concepts of Virtualization and Security in the cloud computing environment.	BTL3	PO1, PO2, PO3, PO6, PO10
CO3	Analyze the concept of Data Centres with Cloud Computing and examine the Use cases of various Cloud Computing Titans.	BTL4	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10
CO4	Design & Appraise Cloud Computing based VMS and weigh the advantages & disadvantages of various proprietary	BTL6	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, P9,

	platforms along with available best practices.		PO10, PO11

UNIT – I

No. of Hours: 10 Chapter / Book Reference: TB1 [Chapters 1,2]

Introduction to Cloud Computing: Definition, Evolution & Characteristics, Service Models of cloud computing Iaas, PaaS, SaaS and their Comparisons, Issues & Challenges of Cloud Computing, Applications of Cloud computing, Overview of Cloud Computing Security Configurations.

Cloud Computing Architecture: Introduction, Cloud Architecture, Deployment of Models – (Public, Private, Community, and Hybrid Clouds) and their comparisons, IDaaS, Over View of Data intensive computing through Map Reduce.

UNIT – II

No. of Hours: 10 Chapter / Book Reference: TB1 [Chapters 3, 4]

Virtualization in Cloud: Virtualization, Implementation of Virtualization, Middleware Support for Virtualization, Advantages & Applications of Virtualization, Virtualization Implementation Techniques, Hardware Virtualization, Types of Virtualization.

Security Issues in Cloud Computing: Introduction, Security Challenges in Cloud Computing, Information Security, Privacy and Trust in Cloud Computing.

UNIT – III

No. of Hours: 10 Chapter / Book Reference: TB2 [Chapter 3]; TB3 [Chapter 6]

Data Centre Architecture and Technologies: Architectural Building Blocks of Data Centre, Industry Direction and Operational and Technical Phasing, Industry Direction and Overview of Operational and Technical Phasing (Overview of 5 Phases).

Computing with Titans: Google, Microsoft, Amazon, IBM, Accessing the Cloud- Platforms through a brief overview of Web Applications, Web API's, Web Browsers.

UNIT – IV

No. of Hours: 10 Chapter / Book Reference: TB3 [Chapters 13,14]; TB4 [Chapter 6]

Migrating to the Cloud: Cloud Services for Individuals, Cloud Services aimed at Mid-Markets, Enterprise, Best Practices and Future of Cloud Computing.

Implementation of Cloud Using Any Cloud Platform : Introduction to Web Services**,** Structure, Objective, Cloud Portals, Groups, Mobile Apps, Setting up of Cloud Services, Containers, Handling Cloud Shell, Setting up of projects, Building Virtual Infrastructure, Deployment of Virtual Machine, Configuring Load Balancing.

TEXT BOOKS:

TB1. V. K. Pachghare, "Cloud Computing" PHI Learning, 1st Edition, 2016.

TB2. Venkata Josyula, Malcom Orr, Greg Page, "Cloud Computing – Automating the Virtualized Data Center", Cisco Press, 1st Edition, 2016.

TB3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing a Practical Approach", McGraw Hill, 1st Edition, 2015.

TB4. Mitanshi Joshi, "Agile, DevOps and Cloud Computing with Microsoft Azure", BPB

Publications, 1st Edition, 2019.

REFERENCE BOOKS:

RB1. Erl Thomas, Puttini Ricardo, Mahmood Zaigham ,"Cloud Computing - Concepts, Technology and Architecture", Pearson India, 1st Edition, 2014.

RB2. Srinivas Cheemalapti Yi-an Chang, Shahir Daya, Matthieu Debeaux, Odilon Magroski Goulart, Vasfi Gucer, Rahul Gupta, Shamim Hossain, David Kwock, Jordan T Moore, David N Nguyen, Bobby Woolf, "Hybrid Cloud Data and API Integration: Integrate Your Enterprise and Cloud with Bluemix Integration Services", IBM Redbooks, 2nd Edition, 2016.

RB3. Has Altaiar Jack Lee, Michael Peña, "Cloud Analytics with Microsoft Azure: Build modern data warehouses with the combined power of analytics and Azure", Packt Publishing Ltd, 1st Edition, 2019.

RB4. Mitesh Soni, Wayde Gilchrist, "Designing AWS Environments: Architect large-scale cloud infrastructures with AWS", Packt Publishing Ltd, 1st Edition, 2018.

RB5. Dan Sullivan, "Official Google Cloud Certified Associate Cloud Engineer Study Guide", John Wiley & Sons, 1st Edition, 2019.