CMR ENGINEERING COLLEGE

UGC AUTONOMOUS

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE INSTRUCTOR NAME: **Mr.M.PRABHAKAR** **ACADEMIC YEAR: 2023-24**

SUBJECT NAME: **CLOUD COMPUTING**

EMAIL-ID:-**prabhakar.m@cmrec.ac.in** CLASS ROOM NO: B-211

CONTACT NO: 9618929596

SEM START DATE AND END DATE: **04-12-2023 T0 27-03-2024**

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HOD

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1. Department Vision Mission

Vision:

To produce globally competent and industry-ready graduates in Computer Science & Engineering by imparting quality education with the know-how of cutting-edge technology and holistic personality.

Mission:

1. To offer high-quality education in Computer Science & Engineering in order to build core competence for the graduates by laying a solid foundation in Applied Mathematics and program framework with a focus on concept building.
2. The department promotes excellence in teaching, research, and collaborative activities to prepare graduates for a professional career or higher studies.
3. Creating an intellectual environment for developing logical skills and problem-solving strategies, thus developing, an able and proficient computer engineer to compete in the current global scenario.

2. LIST OF PEOs, POs AND PSOs

2.1 Program Educational Objectives (PEO):

PEO 1: Excel in professional career and higher education by acquiring knowledge of mathematical computing and engineering principles.
PEO 2: To provide an intellectual environment for analyzing and designing computing systems for technical needs.
PEO 3: Exhibit professionalism to adapt current trends using lifelong learning with legal and ethical responsibilities.
PEO 4: To produce responsible graduates with effective communication skills and multidisciplinary practices to serve society and preserve the environment.

2.2. Program Outcomes (POs):

Engineering Graduates will be able to satisfy these NBA graduate attributes:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

2.3 Program Specific Outcomes (PSOs):

PSO1: Professional Skills and Foundations of Software development: Ability to analyze, design and develop applications by adopting the dynamic nature of Software developments.
PSO2: Applications of Computing and Research Ability: Ability to use knowledge in cutting edge technologies in identifying research gaps and to render solutions with innovative ideas.

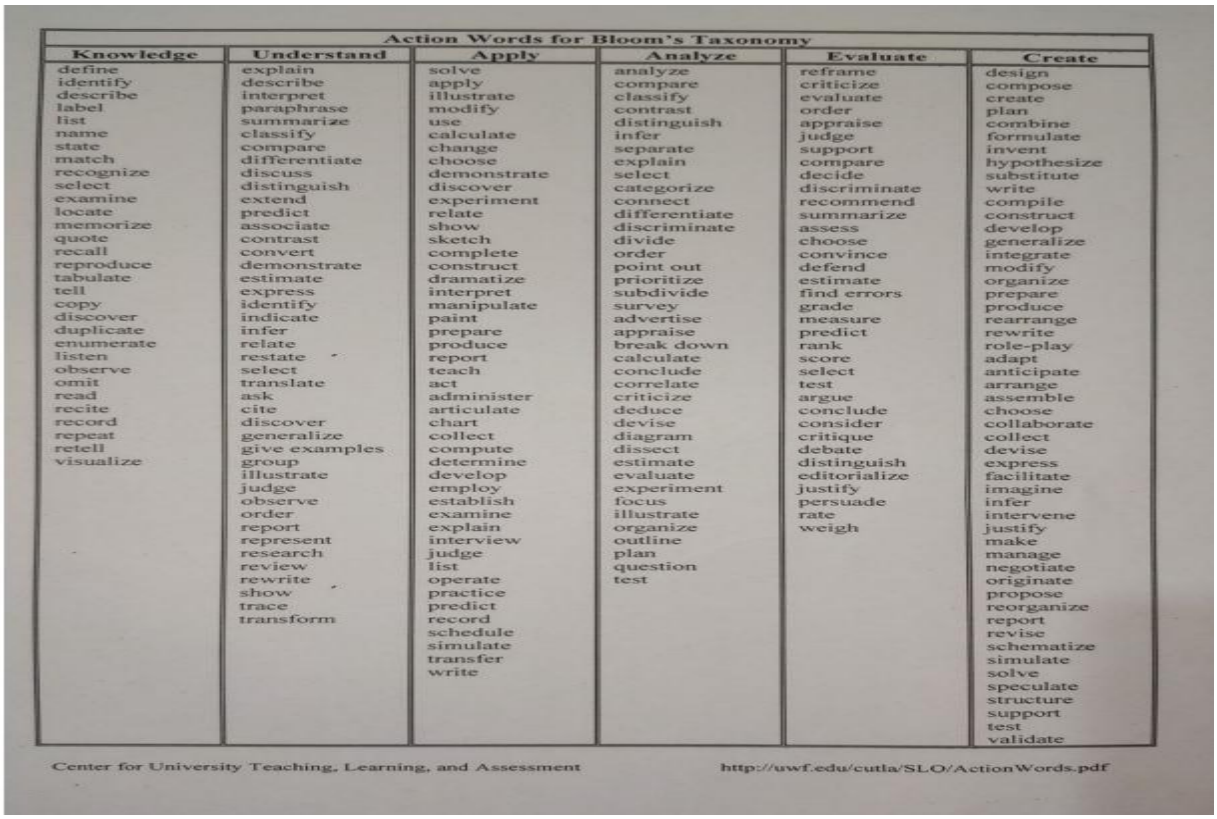
1. List of course outcomes with BTL

CO1	Interpreting the types of cloud computing paradigms **(APPLY)**
CO2	Discuss cloud computing fundamentals. **(UNDERSTAND)**
CO3	Analyze various service delivery models of a cloud computing architecture **(Analyze)**
CO4	Ability to understand the ways in which the cloud can be programmed and deployed. **(Able)**
CO5	Summarize cloud service providers.

REVISED Bloom's Taxonomy Action Verbs

Definitions	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	- Choose - Define - Find - How - Label - List - Match - Name - Omit - Recall - Relate - Select - Show - Spell - Tell - What - When - Where - Which - Who - Why	- Classify - Compare - Contrast - Demonstrate - Explain - Extend - Illustrate - Infer - Interpret - Outline - Relate - Rephrase - Show - Summarize - Translate	- Apply - Build - Choose - Construct - Develop - Experiment with - Identify - Interview - Make use of - Model - Organize - Plan - Select - Solve - Utilize	- Analyze - Assume - Categorize - Classify - Compare - Conclusion - Contrast - Discover - Dissect - Distinguish - Divide - Examine - Function - Inference - Inspect - List - Motive - Relationships - Simplify - Survey - Take part in - Test for - Theme	- Agree - Appraise - Assess - Award - Choose - Compare - Conclude - Criteria - Criticize - Decide - Deduct - Defend - Determine - Disprove - Estimate - Evaluate - Explain - Importance - Influence - Interpret - Judge - Justify - Mark - Measure - Opinion - Perceive - Prioritize - Prove - Rate - Recommend - Rule on - Select - Support - Value	- Adapt - Build - Change - Choose - Combine - Compile - Compose - Construct - Create - Delete - Design - Develop - Discuss - Elaborate - Estimate - Formulate - Happen - Imagine - Improve - Invent - Make up - Maximize - Minimize - Modify - Original - Originate - Plan - Predict - Propose - Solution - Solve - Suppose - Test - Theory

Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing, Abridged Edition. Boston, MA: Allyn and Bacon.



Action Words for Bloom's Taxonomy

Knowledge	Understand	Apply	Analyze	Evaluate	Create
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	identify	manipulate	survey	grade	produce
discover	indicate	paint	advertise	measure	rearrange
duplicate	infer	prepare	appraise	predict	rewrite
enumerate	relate	produce	break down	rank	role-play
listen	restate	report	calculate	score	adapt
observe	select	teach	conclude	select	anticipate
omit	translate	act	correlate	test	arrange
read	ask	administer	criticize	argue	assemble
recite	cite	articulate	deduce	conclude	choose
record	discover	chart	devise	consider	collaborate
repeat	generalize	collect	diagram	critique	collect
retell	give examples	compute	dissect	debate	devise
visualize	group	determine	estimate	distinguish	express
	illustrate	develop	evaluate	editorialize	facilitate
	judge	employ	experiment	justify	imagine
	observe	establish	focus	persuade	infer
	order	examine	illustrate	rate	intervene
	report	explain	organize	weigh	justify
	represent	interview	outline		make
	research	judge	plan		manage
	review	list	question		negotiate
	rewrite	operate	test		originate
	show	practice			propose
	trace	predict			reorganize
	transform	record			report
		schedule			revise
		simulate			schematize
		transfer			simulate
		write			solve
					speculate
					structure
					support
					test
					validate

Center for University Teaching, Learning, and Assessment http://uwf.edu/cutla/SLO/ActionWords.pdf

4. Syllabus Copy and Suggested/Reference Books

CLOUD COMPUTING

	L	T	P	C
B.TECH IV YEAR I SEM				
COURSE CODE: CS743PE	**3**	**0**	**0**	**3**

SYLLABUS

UNIT- I

Computing Paradigms: High-Performance Computing, Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing, Bio computing, Mobile Computing, Quantum Computing, Optical Computing, Nano computing.

UNIT – II

Cloud Computing Fundamentals: Motivation for Cloud Computing, The Need for Cloud Computing, Defining Cloud Computing, Definition of Cloud computing, Cloud Computing Is a Service, Cloud Computing Is a Platform, Principles of Cloud computing, Five Essential Characteristics, Four Cloud Deployment Models

UNIT – III

Cloud Computing Architecture and Management: Cloud architecture, Layer, Anatomy of the Cloud, Network Connectivity in Cloud Computing, Applications, on the Cloud, Managing the Cloud, Managing the Cloud Infrastructure Managing the Cloud application, Migrating Application to Cloud, Phases of Cloud Migration Approaches for Cloud Migration.

UNIT – IV

Cloud Service Models: Infrastructure as a Service, Characteristics of IaaS. Suitability of IaaS, Pros and Cons of IaaS, Summary of IaaS Providers, Platform as a Service, Characteristics of PaaS, Suitability of PaaS, Pros and Cons of PaaS, Summary of PaaS Providers, Software as a Service, Characteristics of SaaS, Suitability of SaaS, Pros and Cons of SaaS, Summary of SaaS Providers, Other Cloud Service Models..

UNIT – V

Cloud Models, IBM Smart Cloud, SAP Labs, Cloud Service Providers: EMC, EMC IT, Captiva Cloud Toolkit, Google, Cloud Platform, Cloud Storage, Google Cloud Connect, Google Cloud Print, Google App Engine, Amazon Web Services, Amazon Elastic Compute Cloud, Amazon Simple Storage Service, Amazon Simple Queue , service, Microsoft, Windows Azure, Microsoft Assessment and Planning Toolkit, SharePoint, IBM, SAP HANA Cloud Platform, Virtualization Services Provided by SAP, Sales force, Sales Cloud, Service Cloud: Knowledge as a Service, Rack space, VMware, Manjra.

TEXT BOOKS

1. Essentials of cloud Computing: K. Chandrasekhran, CRC press, 2014

REFERENCE BOOK

1. Cloud Computing: Principles and Paradigms by Rajkumar Buyya, James Broberg and Andrzej M. Goscinski, Wiley, 2011.
2. Distributed and Cloud Computing, Kai Hwang, Geoffery C. Fox, Jack J. Dongarra, Elsevier, 2012.
3. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, Tim Mather, Subra Kumaraswamy, Shahed Latif, O'Reilly, SPD, rp2011

5. **Individual Time Table (M.Prabhakar)**

Mr.M Prabhakar	**SUB-CC**						**WL=20**	
	I(9:10-10:10)	**II(10:10-11:00)**	**III(11:00-11:50)**	**IV(11:50-12:40)**		**V(1:20-2:20)**	**VI(2:20-3:10)**	**VII(3:10-4:00)**
MON			**CC-IV-D**		**L**	**CC-IV-D**		
TUE			**CC-IV-D**		**U**		**CC-IV-D**	
WED	**CC-IV-D**			**CC-IV-D**	**N**			
THU	**MAJOR PROJECT STAGE-2**				**C**	**MAJOR PROJECT STAGE-2**		
FRI	**MAJOR PROJECT STAGE-2**				**H**	**MAJOR PROJECT STAGE-2**		
SAT	**MAJOR PROJECT STAGE-2**					**MAJOR PROJECT STAGE-2**		

6. Session plan/ Lesson plan

S.NO	Topic (JNTU syllabus)	TOPIC TO BE COVERED	Suggested Books (Eg. T1, T2,R5)	NO. OF LECTURES REQUIRED	Method of Teaching
	Computing Paradigms	**UNIT - I**			
1		High-Performance Computing, Parallel Computing	T1	L1,L2	M1
2		Distributed Computing	T1	L3	M1
3		Cluster Computing, Grid Computing	T1	L4	M4
4		Cloud Computing	T1	L5	M1
5		Bio computing, Mobile Computing	T1	L6	M1
6		Quantum Computing	T1	L7,L8	M1
7		Optical Computing, Nano computing.	T1	L9	M1
TOTAL LECTURES PLANNED:9					
	Cloud Computing Fundamentals :	**UNIT - II**			
8		Motivation for Cloud Computing, The Need for Cloud Computing	T1	L10	M1
9		Defining Cloud Computing	T1	L11	M1
10		Definition of Cloud computing	T1	L12	M1
11		Cloud Computing Is a Service, Cloud Computing Is a Platform	T1	L13,L14	M4
12		Principles of Cloud computing	T1	L15	M1
13		Five Essential Characteristics	T1	L16	M1
14		Four Cloud Deployment Models	T1	L17	M1
TOTAL LECTURES PLANNED:8					

	Cloud Computing Architecture and Management	**UNIT-III**			
15		Cloud architecture, Layer, Anatomy of the Cloud	T1	L18	M4
16		Network Connectivity in Cloud Computing	T1	L19	M1
17		Applications on the Cloud	T1	L20	M1
18		Managing the Cloud	T1	L21	M4,M6
19		Managing the Cloud Infrastructure	T1	L22	M1
20		Managing the Cloud application	T1	L23	M4
21		Migrating Application to Cloud	T1	L24	M1
22		Phases of Cloud Migration,Approaches for Cloud Migration	T1	L25,L26	M1
TOTAL LECTURES PLANNED: 9					
	Cloud Service Models	**UNIT -IV**			
23		Infrastructure as a Service	T1	L27	M1
24		Characteristics of IaaS. Suitability of IaaS,	T1	L28	M4
25		Pros and Cons of IaaS, Summary of IaaS Providers	T1	L29	M1
26		Platform as a Service	T1	L30	M1
27		Characteristics of PaaS, Suitability of PaaS,	T1	L31	M4
28		Pros and Cons of PaaS, Summary of PaaS Providers,	T1	L32	M1
29		Software as a Service	T1	L33	M1
30		Characteristics of SaaS, Suitability of SaaS,	T1	L34	M4
31		Pros and Cons of SaaS, Summary of SaaS Providers	T1	L35	M1
32		Other Cloud Service Models	T1	L36	M1
TOTAL PLANED LECTURES:10					
		UNIT-V			
33		EMC, EMC IT, Captiva Cloud Toolkit,	T1	L37	M1,M4

34	Cloud Service Providers	Google, Cloud Platform, Cloud Storage	T1	L38	M1,M4
35		Google Cloud Connect	T1	L39	M1
36		Cloud Storage, Google Cloud Connect	T1	L40	M1,M4
37		Google Cloud Print, Amazon Web Services,	T1	L41	M1,M4
38		Google App Engine, Amazon Web Services	T1	L42	M1,M4
39		Amazon Elastic Compute Cloud	T1	L43	M1,M4
40		Amazon Simple Storage Service	T1	L44	M1,M4
41		Amazon Simple Queue ,service	T1	L45	M1,M4
42		Microsoft, Windows Azure	T1	L46	M1,M4
43		Microsoft Assessment and Planning Toolkit	T1	L47	M1,M4
44		SharePoint, IBM, Cloud Models	T1	L48	M1,M4
45		IBM Smart Cloud	T1	L49	M1,M4
46		SAP Labs, SAP HANA Cloud Platform	T1	L50	M1,M4
47		Virtualization Services Provided by SAP	T1	L51	M1,M4
48		Sales force, Sales Cloud, Service Cloud	T1	L52	M1,M4
49		Knowledge as a Service, Rack space	T1	L53	M1,M4
50		VMware	T1	L54	M1,M4
51		Manjra soft, Aneka Platform	T1	L55	M1,M4
TOTAL PLANED LECTURES:19					
TOTAL REQUIRED LECTURES:55					

METHODS OF TEACHING:

M1 : Lecture Method	**M4 : Presentation /PPT**	**M7 : Assignment**
M2 : Demo Method	**M5 : Lab/Practical**	**M8 : Industry Visit**
M3 : Guest Lecture	**M6 : Tutorial**	**M9 : Project Based**

7. Session Execution Log

S no	Units	Scheduled started date	Completed date	Remarks
1	I	04-12-23	20-01-24	Completed
2	II	21-01-24	02-02-24	Completed
3	III	03-02-24	20-02-24	Completed
4	IV	21-02-24	15-03-24	Completed
5	V	16-03-24	27-03-24	Completed

8. LECTURE NOTES (hand written/soft copy print)

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9. ASSIGNMENT QUESTION (mid-1 &mid-2)

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Kandlakoya (V), Medchal (M), Medchal - Malkajgiri (D)-501401

Department of Computer Sciences and Engineering

IV. B.Tech – II-ASSIGNMENT-I-JAN 2024

Branch: CSE
Subject: CC **Marks: 5**

I. Write all Questions **5x1=5**

1. Define cloud computing? Explain, how Cloud computing is used as platform. (CO1)
2. How a cluster computing differs from cloud computing? State the need for cluster computing and grid computing. (CO1)
3. Examine and present the motivation of Cloud computing. (CO2)
4. Present the basic requirements for cloud services (CO2)
5. Discuss about applications in cloud. (CO3)

Department of Computer Sciences and Engineering

IV. B.Tech – II MID-2-ASSIGNMENT-II-MAR 2024

Branch: CSE

Subject: CC **Marks: 5**

I. Write all Questions **5x1=5**

1. Discuss the Migrating Application to Cloud **(C03)**

2. Illustrate Amazon elastic Compute Cloud (EC2). **(C04)**

3. How to protect your AWS credentials? **(C04)**

4. What are the suitable conditions of PaaS? Discuss briefly. **(C05)**

5. Illustrate the Microsoft Windows Azure. **(C05)**

10. MID Exam Question Papers (samples)

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IV.B.TECH- I-SEM-I MID EXAMINATION **Date: Time: 30/01/2024** **10:00-11:30 AM**

Subject: CLOUD COMPTING **(CS743PE) Branch: Common to CSE** **Marks: 25 M**

Note: Question paper contains two parts, Part - A and Part - B.
Part-A is compulsory which carries 10 marks. Answer all questions in part-A.
Part-B consists of (2 1/2) units. Answer any one full question from each unit. Each question carries 5 marks and may have a, b, c sub questions.

PART-A **5X2=10**

1. What is Bio Computing? (CO1)
2. What is Grid Computing? (CO1)
3. What is need of cloud computing (CO2)
4. List out cloud computing Services (CO2)
5. What are the Cloud Storage Levels? (CO3)

PART-B **3X5=15**

6. Explain the need and features of cloud computing. (CO1)

(OR)

7. Enumerate the differences between Nano computing and optical computing. (CO1)

8. Explain the principles of cloud computing (CO2)

(OR)

9. What are the five essential characteristics of cloud computing? Discuss. (CO2)

10 .Describe the Cloud Computing Architecture. (CO3)

(OR)

11. Discuss about applications in cloud. (CO3)

DESCRIPTIVE TEST

11. MID-1-SCHEME OF EVALUATION

Sl. No.		THEORY	MARKS	TOTAL
PART-A	1.	What is Bio Computing?	2	2
	2.	What is Grid Computing?	2	2
	3.	What is need of cloud computing	2	2
	4.	List out cloud computing Services	2	2
	5.	What are the Cloud Storage Levels?	2	2
PART-B	6.	Explain the need and features of cloud computing.	5	5
	7.	Enumerate the differences between Nano computing and optical computing.	5	5
	8.	Explain the principles of cloud computing	5	5
	9.	What are the five essential characteristics of cloud computing? Discuss.	5	5
	10.	Describe the Cloud Computing Architecture.	5	5
	11.	Discuss about applications in cloud.	5	5
TOTAL MARKS				25M

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IV.B.TECH- I-SEM-II MID EXAMINATION **Date: Time: 30/03/2024** **1:30PM-3:00 PM**

Subject: CLOUD COMPTING **(CS743PE) Branch: Common to CSE** **Marks: 25 M**

Note: Question paper contains two parts, Part - A and Part - B.

Part-A is compulsory which carries 10 marks. Answer all questions in part-A.

Part-B consists of (2 1/2) units. Answer any one full question from each unit. Each question carries 5 marks and may have a, b, c sub questions.

PART-A **5X2=10**

1.Differentiate between public and Private Cloud.	(CO3)
2.List out Primary Requirements from a Cloud Computing Infrastructure.	(CO4)
3.What is SLA? What is its role in Cloud Computing?	(CO4)
4.What is Amazon Web Services?	(CO5)
5.Write a brief note on Google's Cloud storage.	(CO5)

PART-B **3X5=15**

6. Explain the Features of Cloud Infrastructure Management.	(CO3)
(OR)	
7. What are the Broad Approaches to migrate into the Cloud? Explain	(CO3)
8. What are the pros and cons of SaaS?	(CO4)
(OR)	
9. What are the suitable conditions of PaaS? Discuss briefly	(CO4)
10. List out and brief the features of Amazon Simple Queue Service	(CO5)
(OR)	
11. Explain the cloud services provided by Windows Azure.	(CO5)

11. MID-II-SCHEME OF EVALUATION

Sl. No.		THEORY	MARKS	TOTAL
PART-A	1.	Differentiate between public and Private Cloud.	2	2
	2.	List out Primary Requirements from a Cloud Computing Infrastructure	2	2
	3.	What is SLA? What is its role in Cloud Computing?	2	2
	4.	What is Amazon Web Services?	2	2
	5.	Write a brief note on Google's Cloud storage.	2	2
PART-B	6.	Explain the Features of Cloud Infrastructure Management.	5	5
	7.	What are the Broad Approaches to migrate into the Cloud? Explain	5	5
	8.	What are the pros and cons of SaaS?	5	5
	9.	What are the suitable conditions of PaaS? Discuss briefly	5	5
	10.	List out and brief the features of Amazon Simple Queue Service	5	5
	11.	Explain the cloud services provided by Windows Azure.	5	5
TOTAL MARKS				25M

12. Mapping of Course Objectives, Course Outcomes with PEOs and Pos

	Program Outcome(PO):												
PEOS		1	2	3	4	5	6	7	8	9	10	11	12
	I	x	x	x	x								
	II	x	x	x	x	x						x	
	III		x	x	x	x							

Course Outcomes	Relationship of Course outcomes to Program Outcomes (PO AVG)													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PS O2
CO1	2	2	1	-	-	-	-	-	-	-	-	-	-	1
CO2	-	3	2	1	-	2	-	-	-	-	-	-	1	2
CO3	1	3	3	2	-	-	-	-	-	-	-	-	1	3
CO4	1	2	3	-	-	-	-	-	-	-	-	-	-	1
CO5	-	2	1	-	-	2	-	-	-	-	-	-	-	-

13. Cos, Pos, PSOs Justification:

CO1: Know the basic concepts Interpreting the types of cloud computing paradigms
Correlated with PO1 moderately: mapped as students will be able to understand the principles of the cloud computing and virtualization
Correlated with PO2 moderately: mapped as students will be able to identify working principles of cloud
Correlated with PO3 moderately: Moderately mapped as students can use the concepts of cloud computing and virtualization for cloud solutions

CO2: Discuss cloud computing fundamentals.
Correlated with PO1 moderately: Because it provides fundamentals of computer science. So, correlation is good.
Correlated with PO2 moderately: mapped as students will be able to identify the services of Thread and Task-based cloud application models.

Correlated with PO3 moderately: It contributes to provide scope of identifying some solution to complex problems but not a complete. So, the correlation of CO2 is moderate.

CO3 Analyze various service delivery models of a cloud computing architecture
Correlated with PO4 moderately: mapped as students will be able to understand the Thread and Task-based cloud application models.
Correlated with PO5 moderately: Slightly mapped as students will be able to identify the services of Data intensive computing
Correlated with PO12 moderately: Students get knowledge on different techniques of message passing so that it motivates student to learn new technologies. The correlation is moderate.

CO4: Ability to understand the ways in which the cloud can be programmed and deployed..
Correlated with PO1 moderately: mapped as students can use the concepts of Cloud scientificapplications for developing cloud applications.
Correlated with PO2 moderately: mapped as students can apply the concepts of Map-Reduceprogramming in continuing professional development. So, overall the correlation of CO1 is good.
Correlated with PO3 moderately: It contributes only knowledge on developing complex problems but, cannot provide a complete solution to Complex problems. So, overall the correlation of CO1 is good.
CO5: Summarize cloud service providers.
Correlated with PO1 Slightly mapped as students will be able to understand the Amazon web services, Google App Engine, Microsoft Azure and Cloud scientific applications
Correlated with PO2 moderately: mapped as students will be able to identify the services of Amazon web services, Google AppEngine and Microsoft Azure So, overall the correlation of CO1 is good.
Correlated with PO5 High: mapped as students can apply the concepts of Amazon web services, Google App Engine and Microsoft Azure in continuing professional development. So the correlation is high.
Moderately mapped as students can use the concepts of Cloud scientific applications for developing cloud applications.

14. ATTAINMENT OF CO's, PO's AND PSO's (EXCEL SHEET)

Relationship of Course outcomes to Program Outcomes (PO AVG)													
PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
3	3	2	3	-	-	-	-	2	-	-	1	1	2
3	3	3	3	-	-	-	-	2	-	-	1	1	3
3	3	3	3	-	-	-	-	2	-	-	1	1	2
3	3	2	3	-	-	-	-	2	-	-	1	-	3
3	3	3	3	-	-	-	-	2	1	-	1	1	3

ASSESSMENT OF POs THROUGH THE COURSE			
PO	CO	Value	AVG PO (mid)
PO1	CO1		
	CO3		
	CO4		
	CO5		
	CO6		
PO2	CO1		
	CO2		
	CO3		
	CO4		
	CO5		
PO3	CO1		
	CO2		
	CO3		
	CO4		
	CO5		
	CO6		
PO4	CO2		
	CO3		
	CO6		
PO5	CO5		
PO12	CO2		
PSO1	CO2		
	CO3		
PSO2	CO1		
	CO2		
	CO3		
	CO4		
	CO6		

15. PREVIOUS YEAR QUESTION PAPERS:

Code No: 137BC **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, December - 2019
CLOUD COMPUTING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Define the terms, Grid Computing and Quantum Computing.	[2]
b)	Compare Distributed Computing with Parallel Computing and Network Computing.	[3]
c)	What is cloud computing? Give a formal definition as per NIST.	[2]
d)	List out and brief the principles of cloud computing.	[3]
e)	What is meant by Elasticity and Multitenancy?	[2]
f)	What is SLA? What is its role in Cloud Computing?	[3]
g)	As per NIST give the definition of Infrastructure as a Service.	[2]
h)	Write short notes on the deployment and delivery of cloud service models with a neat diagram.	[3]
i)	Write a brief note on Google's Cloud storage.	[2]
j)	What are the basic modules of EMC's Captiva Cloud Toolkit?	[3]

PART – B

(50 Marks)

2.	"Quantum Computers are millions of times faster than most powerful supercomputers today", Justify your answer.	[10]
	OR	
3.a)	Discuss in detail about Nano computing and Optical Computing.	
b)	Why is it necessary to understand the various computing paradigms?	[5+5]
4.	Describe the five essential characteristics of Cloud Computing.	[10]
	OR	
5.a)	Elaborate the term "Software as a Service" related to cloud computing.	
b)	Give the drawbacks of Cloud Computing paradigm.	[6+4]
6.	Describe the role of Network Connectivity in Cloud Computing.	[10]
	OR	
7.	Explain how to attain QoS by managing by managing cloud.	[10]

Code No: 157AW **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, January/February - 2023
CLOUD COMPUTING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Why is it necessary to understand the various computing environments?	[2]
b)	How parallel computing differs from Distributed computing?	[3]
c)	What is cloud computing?	[2]
d)	State the need for cloud computing.	[3]
e)	What is public cloud access networking?	[2]
f)	Describe Elasticity and Multitenancy properties in brief.	[3]
g)	What do you mean by Desktop as a Service cloud mode?	[2]
h)	Write down the pros and cons of Platform as a service.	[3]
i)	What is the main purpose of Google Cloud Connect?	[2]
j)	Give an overview of Google App Engine cloud service.	[3]

PART – B

(50 Marks)

2.	What is High-Performance computing? Describe the need of HPC taking any two real case scenarios.	[10]
	OR	
3.a)	How a cluster computing differs from cloud computing? State the need for cluster computing and grid computing.	
b)	Give a detail note on Quantum computing and Optical computing.	[5+5]
4.	What are the principles of cloud computing? Explain in detail.	[10]
	OR	
5.a)	Examine and present the motivation of Cloud computing.	
b)	Present the basic requirements for cloud services.	[5+5]
6.	Provide and overview about application migration to the cloud.	[10]
	OR	
7.a)	Write a detail description about managing the cloud.	
b)	Give an insight on the anatomy of the cloud.	[5+5]

Code No: 157AW

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, February/March - 2022
CLOUD COMPUTING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks

- - -

1.	In detail, explain the following computing paradigms a) Mobile Computing b) Cluster Computing.	[7+8]
2.a)	Explain the need and features of cloud computing.	
b)	Enumerate the differences between nano computing and optical computing.	[8+7]
3.a)	Explain cloud computing with perspective as a platform.	
b)	Discuss about the four cloud deployment models.	[7+8]
4.a)	Explain the principles of cloud computing.	
b)	Explain the service-platform-infrastructure (SPI) model of the cloud.	[7+8]
5.	With a neat diagram, explain the components in the anatomy of the cloud.	[15]
6.a)	Explain the different phases of cloud migration.	
b)	Discuss about network connectivity in cloud computing.	[8+7]
7.a)	What is Software-as-a-Service (SaaS)? Explain the characteristics of SaaS.	
b)	Explain the pros and cons of IaaS.	[8+7]
8.	Write Short notes on: a) SAP HANA Cloud Platform b) VMware.	[7+8]

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Code No: 157AW **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, July/August - 2022
CLOUD COMPUTING
(Common to CSE, IT)

Time: 3 Hours **Max.Marks:75**

Answer any five questions
All questions carry equal marks
\- - -

1.a) Differentiate between cluster computing and cloud computing.
b) Explain in detail about optical and Nano computing. [5+10]

2. What is high performance computing? How to achieve it? Explain different technologies used to achieve high performance computing. [15]

3.a) Define cloud computing? Explain, how Cloud computing is used as platform.
b) What are the five essential characteristics of cloud computing? Discuss. [5+10]

4. Discuss in detail about different deployment models of cloud. [15]

5.a) Explain about network connectivity in cloud computing.
b) Discuss about applications in cloud. [7+8]

6.a) Discuss the phases involved in migrating a cloud.
b) Explain how cloud applications are managed. [7+8]

7.a) Discuss in detail about characteristics, suitability, pros and cons of IaaS.
b) Discuss about examples of IaaS providers and range of services they offer. [10+5]

8.a) Explain briefly about Captiva Cloud Toolkit.
b) What is virtualization? Explain about virtualization services provided by SAP. [5+10]

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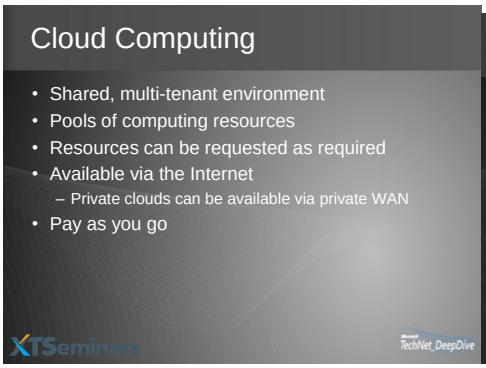
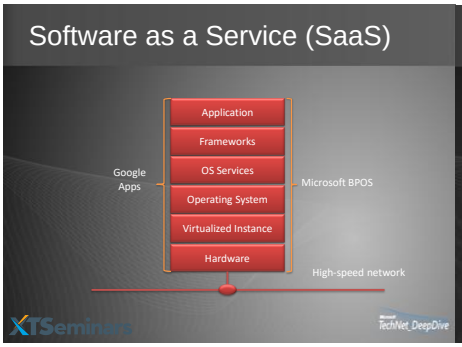
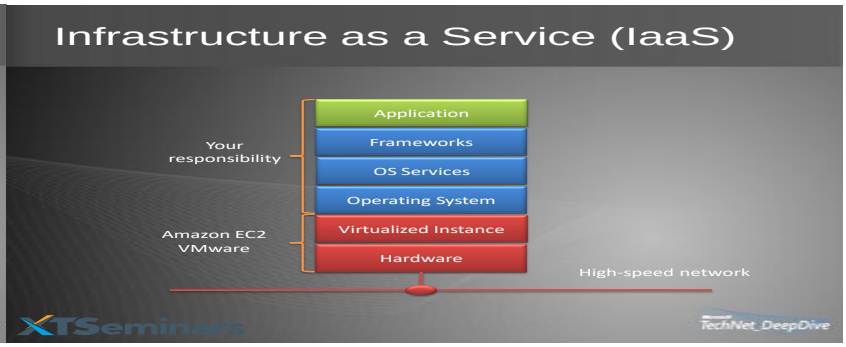
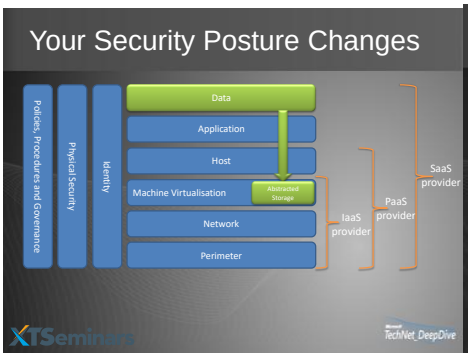
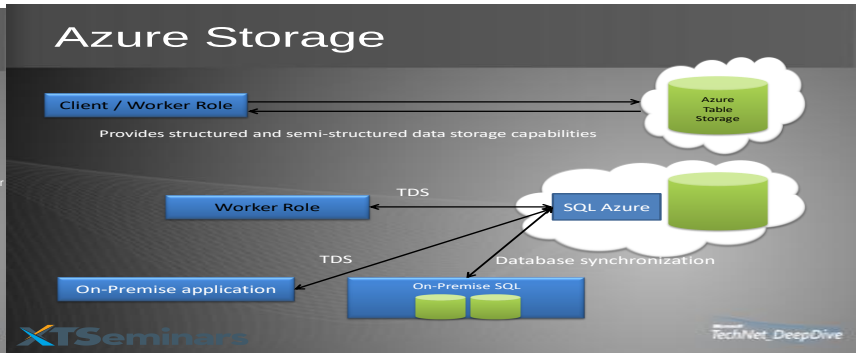
16. Power point presentations











17. Innovation teaching methods (Innovation assignment)

1.Discuss the Migrating Application to Cloud.

2.List out Primary Requirements from a Cloud Computing Infrastructure.

18. Websites

- www.gofpatterns.com
- http://www.oodesign.com/
- http://nptel.ac.in/courses/106101061/15

JOURNALS

- Journal of object technology
- Journaldev
- Sage Journal