Syllabus of M.Tech. in Internet of Things

Semester	I
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Course Number	Subject	L	Т	Р	Credits	
PGIT(IoT)101	Program Core I- Mathematical foundations of Computer Science	3	0	0	3	
PGIT(IoT)102	Program Core II- Advanced Data Structures	3	0	0	3	
PGIT(IoT)103 PGIT(IoT)103 B/PGIT(IoT) 103C	Program Elective I- A. Data Science/ B. Wireless Access Technologies/ C. Mobile Applications and Services	3	0	0	3	
PGIT(IoT)104 PGIT(IoT)104 PGIT(IoT)104 C	 Program Elective II- A. Machine Learning/ B. Smart Sensors and Internet of Things/ C. Logic and Functional Programming 	3	0	0	3	
PGIT(IoT)105	Research Methodology and IPR	2	0	0	2	
PGIT(IoT)106A/B/ C/D/E/F	Audit Course	2	0	0	0	
PGIT(IoT)192	Laboratory 1 (Advanced Data Structures)	0	0	4	2	
PGIT(IoT)193A/B/ C	Laboratory 2 (Based on Elective I)	0	0	4	2	
PGIT(IoT)194A/B/ C	Laboratory 3 (Based on Elective II)	0	0	4	2	
	Total Credits: 20					

Semester II

Course Number	Subject	L	Т	Р	
PGIT(IoT)201	Program Core III – Advanced Computer Architecture	3	0	0	3
PGIT(IoT)202	ProgramCore IV – Wireless and Sensor Networks	3	0	0	3
PGIT(IoT)203A/ B/C	 Program Elective III – A. Sensor Networks and Internet of Things B. Data Visualization C. IoT Application and Communication Protocol 	3	0	0	3
PGIT(IoT)204 A/B/C PGIT(IoT)205A/	Program Elective IV – A. Big Data Analytics B. Network Security C. Advanced Machine Learning		0	0	3
B/C/D	Audit Course	2	U	0	0
PGIT(IoT)291	Advanced Computer Architecture Lab	0	0	4	2
PGIT(IoT)292	Wireless and Sensor Networks Lab	0	0	4	2

PGIT(IoT)293A/ B/C	Lab based on Elective III	0	0	4	2	
PGIT(IoT)294	Term Paper with Seminar					
		0	0	4	2	
	Total Credits: 20					

Semester III

Course Number	Subject	L	Т	Р	Credits
PGIT(IoT)301A/B/ C	 Program Elective V – A. Cloud Computing B. Real Time Operating Systems C. Emulation and Simulation Methodologies 	3	0	0	03
PGIT(IoT)302A/ PGIT(IoT)302B/ PGIT(IoT)302C/ PGIT(IoT)302D/ PGIT(IoT)302E/ PGIT(IoT)302F	Open Elective A.Business Analytics B. Industrial Safety C. Operations Research D. Cost Management of Engineering Projects E. Composite Materials F. Waste to Energy	3	0	0	03
PGIT(IoT)391	Dissertation-I /Industrial Project	0	0	20	10
	Total Credits: 16				

Semester IV

Course Number		L	Т	Р	Credits
	Subject				
PGIT(IoT)491	Dissertation II	0	0	32	16
	Total Credits: 16				

<u>Semester I</u>

	the Course: M.Tech. in Int Mathematical Foundatior					
	ode: PGIT(IoT)101	Semester:1st				
	: 48 Hours	Maximum Marks: 100				
		Examination Scheme				
Teaching	,					
Theory: 3		End Semester Exam: 70				
Tutorial:		Attendance: 05				
Practical:	NA	Internal Assessment: 25	1	NT 4		
Credit: 3		Practical Sessional internal continuous e		: NA		
		Practical Sessional external examination	: NA			
Aim:						
Sl. No.						
1.		c notions of discrete and continuous pro				
2.		nods of statistical inference, and the rol	e that sar	npling distributions		
	play in those methods.					
3.	-	orrect and meaningful statistical analys	es of sim	ple to moderate		
	complexity.					
Objective	2:					
Sl. No.						
1.		nematical fundamentals that are prereq				
		ork protocols, analysis of Web traffic, Co				
		architecture, operating systems, distrib	outed sys	tems, Bioinformatics,		
	Machine learning.					
2.		anding of the mathematical and logical				
	-	on technology like machine learning, p	rogramm	ing language design,		
	and concurrency.					
3.	To study various sample	ing and classification problems.				
Pre-Requ	iisite:					
Sl. No.						
1.	Discrete Mathematics					
2.						
Contents			Hrs./w	eek		
Chapter	Name of the Topic		Hours	Marks		
01		ty, and cumulative distribution	7	10		
-		amilies of distributions, Expected		-		
	-	onal expectation, Applications of the				
		riate Central Limit Theorem,				
	Probabilistic inequalitie	•				
02		ling distributions of estimators,	7	12		
	Methods of Moments an					
3		troduction to multivariate statistical	8	12		
-		classification problems, principal				
		he problem of overfitting				
	model assessment.	r				
4		hism, Planar graphs, graph colouring,	11	16		
1	Hamilton circuits and E					
		Permutations and Combinations with and without repetition.				
		to solve combinatorial enumeration				
	specialized techniques	to solve compinatorial enumeration				

	problems								
5		on Technology Applicatio	k 10	15					
	·	analysis of Web traffic, C							
	Software engineering, Computer architecture, operating								
	systems, distributed systems, Bioinformatics, Machine								
	learning.								
6		ends in various distributi		5	5				
		ical field of computer sci	6 6	ke					
		atics, soft computing, and	l computer vision.						
	Sub Total:			40	70				
	Examination	sessment Examination & Pr	eparation of Semester		30				
	Total:	n			100				
Practica					100				
	be develope	d							
SKIIIS (U	be developed	u.							
List of P	ractical SI N	o. 1& 2 compulsory & at	least three from the rest)					
	ractical. Si. N	o. 14 2 compusory 4 at	rease the ce it off the rest	·J					
Assignn	ients:								
List of B	ooks								
Text Bo	oks:								
Name of	f Author	Title of the Book	Edition/ISSN/ISBN	Name of th	1e Publisher				
1. J	ohn Vince,	Foundation		Springer.					
		Mathematics for							
		Computer Science,							
2. I	K. Trivedi.	Probability and		Wiley.					
		Statistics with							
		Reliability, Queuing,							
		and Computer							
		Science Applications.							
	zenmacher	Probability and							
and E. U	pfal.	Computing:							
		Randomized							
		Algorithms and							
		Probabilistic							
	Non Tualson	Analysis.		Wilow					
4.	Alan Tucker	Applied Combinatorics		Wiley					
		combinatorics							
Referen	ce Books:								
Referen	CC DOORS.								
List of e	auipment/an	paratus for laboratory e	xperiments:						
Sl. No.	<u>1po</u> , up		r						
1.									
2.									
3.									
4.									
5.									
		1							

End Sem	ester Exami	ination Schei	ne. Max	<u>kimum Ma</u>	rks-70.	Time al	lotted-3hrs.		
Group	Unit	(MCQ only	Objective Questions (MCQ only with the correct answer)		Subjective Questions				
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks		
Α	1,2,3	12	20	5	3	10	70		
B	4,5	8		4	2	<u> </u>			
• Sp of	ecific instruc the question	tion to the stud paper.	ents to mainta	in the order	ect answer are to in answering of		ions should be given on top		
-	tion Schem	e for end sen			Our estimate to I		tion to be ensured		
Group		Chapter	Chapter Marks o question		Question to l set	ve Ques	tion to be answered		
Fyamina	tion Schem	e for Practica	l Sessional e	vaminatio) n·				
		essional Cont			/				
	Examinatio						40		
Five No of	f								
Experime	nts								
	Examination						60		
experimen									
	periment(on								
group cons	sisting 5 stud								
		Viva voce							

Name of th	Name of the Course: M.Tech. in Internet of Things					
Subject:Ad	Subject:Advanced Data Structures					
	de:PGIT(IoT)102,	Semester: 1st				
PGIT(IoT)	192					
Duration :	48 Hrs.	Maximum Marks: 200				
Teaching	Scheme	Examination Scheme				
Theory: 3		End Semester Exam: 70				
Tutorial: 0		Attendance : 5				
Practical:	4	Continuous Assessment: 25				
Credit: 3 +	2	Practical Sessional internal continuous evaluation:				
		40				
		Practical Sessional external examination: 60				
Aim:						
Sl. No.						
1.	Understand the implementation of symbol table using hashing techniques.					
2.	Develop and analyze algorithms for red-black trees, B-trees and Splay trees.					

	Develop algorithms for text processing applications.							
	Identify suitable data structures and develop algorithms for computational							
0	geometry problems.							
Objective:								
	DT/libraries, and use it to design algorithms for a specifi							
	nts should be able to understand the necessary mathema	atical ab	straction					
	ve problems.							
	niliarize students with advanced paradigms and data str	ucture u	sed to					
	algorithmic problems.							
	nt should be able to come up with analysis of efficiency a	ind proo	fs of					
corre	ctness.							
Pre-Requisite:								
Sl. No.								
	vel course in Data Structures							
4.								
Contents		Hrs./w	eek					
•	of the Topic	Hours	Marks					
01 Dictio	naries: Definition, Dictionary Abstract Data Type,	7	10					
	mentation of Dictionaries.							
Hashi	ng: Review of Hashing, Hash Function, Collision							
	ution Techniques in							
	ng, Separate Chaining, Open Addressing, Linear							
	ng, Quadratic Probing, Double Hashing, Rehashing,							
	dible Hashing.							
	ists: Need for Randomizing Data Structures and	5	12					
	ithms, Search and Update Operations on Skip Lists,							
	bilistic Analysis of Skip Lists, Deterministic Skip Lists							
	: Binary Search Trees, AVL Trees, Red Black Trees, 2-3	9	12					
	, B-Trees, Splay Trees 9							
	Processing: Sting Operations, Brute-Force Pattern	12	16					
	ning, The Boyer- Moore Algorithm, The Knuth-Morris-							
	Algorithm, Standard Tries, Compressed Tries, Suffix							
	The Huffman Coding Algorithm, The Longest Common							
	quence Problem (LCS), Applying Dynamic							
	amming to the LCS Problem.	10						
	utational Geometry: One Dimensional Range	10	15					
	hing, Two Dimensional Range Searching, Constructing							
	rity Search Tree, Searching a Priority Search							
I ree,	Priority Range Trees, Quadtrees, k-D Trees.							
06 Rece r	t Tranda in Uashing Traca and various computational	5	5					
	It Trands in Hashing, Trees, and various computational etry methods for effeciently solving the new evolving	5	3					
probl								
Sub T		48	70					
	al Assessment Examination & Preparation of Semester	40	30					
	nation		30					
Total			100					
Practical: Based		1	200					
Liucucuii Dascu								
Skills to be devel	oped:							

List of Prac	ctical: Sl. No	o. 1& 2 comp	ulsory & at]	least thre	e from the res	t)		
Assignments:								
List of Boo Text Books								
Name of A	uthor	Title of the	Book	Edition/	ISSN/ISBN	-	ne of th lisher	ie
Reference	Books:							
	rk Allen	Data Struct Algorithm A C++		2nd Edition		dition Pearson, 2004		004
2. M T Goodrich, J Tamassia		Algorithm l	Design			Joh	n Wiley	r , 2002 .
List of oau	inmont/an	paratus for la	ahoratory o	vnorimon	tei			
Sl. No.	ipinent/ap	paratus 101 1	abol atol y e.	xpermen				
6.								
7.								
8.								
9.								
10.	ton Enomin	ation Schem	o Mor	imum Ma	when 70	т	ime all	attad
3hrs.	ter Examin	ation Schem	le. Max	iniuni ma	rks-70.	1	inie an	olleu-
Group	Unit	Objective	Questions		Subjective	Que	stions	
-		(MCQ only w correct answ	vith the			·		
		No of	Total	No of	To answer		ks per	Total
		question to be set	Marks	question to be set		ques	stion	Marks
A	ALL	10 be set	10	to be set				
В	ALL			5	3	5		70
С	ALL			5	3	15		
-	-	oice type quest	ion (MCQ) wit	th one corre	ect answer are to	be se	t in the o	objective
part • Spec		on to the stude	nts to maintai	in the order	in answering ob	viectiv	e questi	ons should
•		f the question				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	e queen	ono ono ara
	on Scheme	for end seme						
Group		Chapter	Marks o question		Question to l set	be	Quest answe	ion to be ered
Α		ALL	1		10		10	
B		ALL	5		5		3	
C	C -1	ALL	15		5		3	
		for Practical			on:			
Internal Ex		sional Contii	iuous Evalu	alivii				40
internal E	ammation	•						40

Five No of			
Experiments			
External Examination: Exami	ner-		60
Signed Lab Note Book(for five		10	
experiments)			
On Spot Experiment(one for ea	ch	40	
group consisting 5 students)			
Viva v	oce	10	

	the Course: M.Tech. in Inte	ernet of Things				
,	Data Science ode:PGIT(IoT)103A,	Semester: 1st				
PGIT(Io1		Semester: 1st				
Duration	-	Maximum Marks: 200				
Teaching	g Scheme	Examination Scheme				
Theory:		End Semester Exam: 70				
Tutorial:	0	Attendance : 5				
Practical	:4	Continuous Assessment: 25				
Credit: 3	+ 2	Practical Sessional internal continu 40	ious eva	luation:		
		Practical Sessional external examin	nation: 6	0		
Aim:						
Sl. No.						
1.	-	cted, managed and stored for data scie				
2.		epts in data science, including their rea	al-world			
0	applications and the toolkit used by data scientists; Implement data collection and management scripts using MongoDB					
3.	Implement data collectio	on and management scripts using Mong	ODR			
Objectiv	e:					
Sl. No.						
1.	scientist.	owledge and expertise to become a prof				
2.	Demonstrate an understa are vital for data science	anding of statistics and machine learning;	ng conce	pts that		
3.	-	statistically analyze a dataset;				
4.	Critically evaluate data v communicating stories fi	isualizations based on their design and rom data;	l use for			
Pre-Requ	uisite:					
Sl. No.						
5.						
6.						
Contents			Hrs./w	aak		
Chapte	Name of the Topic		Hours	Marks		
r	Name of the ropic		nours			
01	Unit 1:		6	10		
	Terminology, data scienc	cepts and technologies: Introduction, ce process, data science toolkit, Types				
02	of data, Example applicat		7	12		
02		agement: Introduction, Sources of APIs, Exploring and fixing data, Data		12		

	storage and	l management. Using mu	iltiple data sources						
03	storage and management, Using multiple data sources10Data analysis: Introduction, Terminology and concepts,10								
00	Data analysis: Introduction, Terminology and concepts,1012Introduction to statistics, Central tendencies and1012								
	Introduction to statistics, Central tendencies and distributions, Variance, Distribution properties and								
		istributions, Variance, Distribution properties and rithmetic, Samples/CLT, Basic machine learning algorithms,							
0.4	Linear regression, SVM, Naive Bayes.11Data visualisation: Introduction, Types of data visualisation,11								
04			-	n,	11	16			
		ualisation: Data types, D							
		lapping variables to enc	<u> </u>						
05		s of Data Science, Techn	ologies for visualisatio	n,	7	15			
	Bokeh (Pyt	,							
06	Recent tren	ds in various data colleo	ction and analysis		7	5			
	techniques,	, various visualization te	chniques, application						
	developme	nt methods of used in da	ita science.						
	Sub Total:				48	70			
	Internal Ass	essment Examination & Pr	eparation of Semester			30			
	Examination		-						
	Total:					100			
Practical	Based on T	heory				·			
		U U							
Skills to P	e developed	1:							
	- - -								
List of Pra	actical: SL No	o. 1& 2 compulsory & at	least three from the rea	st)					
		o. 14 2 compuisory 4 at	rease the ce it officient the rea	50					
Assignme	nte								
Assignine									
ListofDo	alta								
List of Bo									
Text Bool				NT.	6.1				
Name of A	Author	Title of the Book	Edition/ISSN/ISBN	-	ne of the	e			
				Pub	ıblisher				
Reference	e Books:								
1. Ca	thy O'Neil	Doing Data Science,	Straight Talk From	0'R	eilly.				
and Rach	el Schutt.		The Frontline.						
2. Ju	re	Mining of Massive	v2.1	Can	ıbridge				
Leskovek		Datasets.			versity				
AnandRa					5				
	y Ullman.								
,	v -								
List of oa	uinment/an	paratus for laboratory e	vneriments:						
Sl. No.	aipinent/ap	puratus ior iaboratory c	aper miento.						
11.									
12.									
13.									
14.									
15.									
1	ester Examir								
3hrs.	ester Examir	nation Scheme. Max	amum Marks-70.	T:	ime allo	otted-			
3hrs. Group	ester Examir	ation Scheme. Max Objective Questions	Subjective			otted-			

		correct ans	wer)					
		No of	Total	No of	To answer	Mar	ks per	Total
		question	Marks	question			stion	Marks
		to be set		to be set				
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
	• •	oice type ques	stion (MCQ) wi	ith one corre	ect answer are to	be se	t in the	objective
	part.							
				in the order	in answering of	ojectiv	e questi	ions should
	be given on top							
	ation Scheme	1			1			
Group		Chapter	Marks o questio	·····		be Question to be answered		
A		ALL	1		10		10	
B		ALL	5		5		3	
C		ALL	15		5		3	
Examin	ation Scheme	for Practica	al Sessional e	examinatio)n:			
	al Internal Se				-			
	l Examinatio							40
Five No	of							
Experin	nents							
Externa	l Examination:	Examiner-		<u> </u>		1		60
0	ab Note Book(fo	or five			10			
experim	,	far as sh			40			
	Experiment(one onsisting 5 stude				40			
group co	insisting 5 stude	Viva voce			10			
		viva vule			10			

Name of	f the Course: M.Tech. in I	nternet of Things				
	Wireless Access Technol	6				
	Code:PGIT(IoT)103B, Semester: 1st					
PGIT(Io						
Duratio	n: 48 Hrs.	Maximum Marks: 200				
Teachin	g Scheme	Examination Scheme				
Theory:	3	End Semester Exam: 70				
Tutorial						
Practica	al: 4 Continuous Assessment: 25					
Credit: 3	3 + 2	Practical Sessional internal continuous evaluation:				
		40				
		Practical Sessional external examination: 60				
Aim:						
Sl. No.						
1.	Interpret basic terms	and characteristics of wireless access networks				
2.	Compare various wire	Compare various wireless access technologies				
3.	Analyze measurement	Analyze measurements of wireless access network parameter				
4.	Assess security issues in wireless networks					

5.	Choose modulation technique for wireless transmission						
Objective							
Sl. No.							
1.	Overview of wireless access technologies, Fixed wireless access Terminal mobility issues regarding wireless access to Internet	networl	KS.				
2.	Introduction to various Network topologies, hotspot networks, Communication links: point-to-point, point-to-multipoint, multipoint-to-multipoint.						
3.	To provide an overview of Standards for most frequently used v networks: WPAN, UWB, WLAN, WMAN, WWAN. Network service networks planning, design and installation.	wireless					
4.	To get and insight of Wireless networking security issues, Wire network exploitation and management, software requirements control.						
Pre-Requ	lisite:						
Sl. No.							
1.	Wireless Networks						
2.							
Contents		Hrs./w	eek				
Chapter	Name of the Topic	Hours	Marks				
01	Necessity for wireless terminals connectivity and networking. Wireless networking advantages and disadvantages, Overview of wireless access technologies. Narrowband and broadband networks, fixed and nomadic networks. Wireless local loop (WLL), Public Switched Telephone Network (PSTN) interfaces.	8	10				
02	Fixed wireless access (FWA) networks, frequency bands for different networks. Criterions for frequency bands allocation, Network topologies, hotspot networks. Communication links: point-to-point (PTP), point- to-multipoint (PMP), multipoint-to-multipoint (MTM).	8	12				
03	Standards for most frequently used wireless access networks: WPAN (802.15, Bluetooth, DECT, IrDA), UWB (Ultra- Wideband), WLAN (802.11, Wi-Fi, HIPERLAN, IrDA), WMAN (802.16, WiMAX, HIPERMAN, HIPERACCESS), WWAN (802.20), Other technologies for broadband wireless access, Local Multipoint Distribution Service (LMDS), Multichannel Multipoint Distribution Servicem (MMDS). Ad Hoc networks, Network services. Services types based on carrier frequency and bandwidth.	10	12				
04	Wireless access networks planning, design and installation. Services provision, legislative and technical aspects, Technical and economic factors for network planning: expenses, coverage, link capacity, network complexity and carrier-to-interference ratio (C/I). Base station or access point allocation. Base station and access point equipment. Terminal mobility issues regarding wireless access to Internet. Wireless networking security issues Example of laptop or handheld PC wireless connection in real	9	16				

Examinat	Assessment Examination & Pr ion				30	
Total: Practical: Based of	1 Theory				100	
Skills to be develoj List of Practical: Sl Assignments:	oed: No. 1& 2 compulsory & at	least three from the re	st)			
List of Books						
Name of Author	ext Books: ame of Author Title of the Book Edition/ISSN/ISBN Na Pu					
Reference Books:						
1. M. P. Clark	Wireless Access Networks: Fixed Wireless Access and WLL networks Design and Operation		-	n Wiley chester	v & Sons,	
2. D. H. Morais				Prentice Hall, Upper Saddle River		
3. R. Pandya	Introduction to WLLs: Application and Deployment for Fixed and Broadband Services			EEE Press, Piscataway		

End Sem 3hrs.	ester Exami	ination Sche	me. Max	ximum Mai	rks-70.	Т	ime all	otted-	
Group	Unit	Objective (MCQ only correct ans			Subjective Questio				
		No of question to be set	Total Marks	No of question to be set	To answer		ks per stion	Total Marks	
А	ALL	10	10						
В	ALL			5	3	5		70	
С	ALL			5	3	15			
<u>Examina</u> Group	tion Schem	e for end sen Chapter	nester exami Marks o	of each	Question to	be	-	tion to be	
			questio	n	set		answered		
A		ALL	1		10		10		
B		ALL	5		5		3		
<u>C</u> Evamina	tion Schom	ALL	15 al Sessional e	vaminatio	5		3		
			inuous Evalu		11.				
	Examinatio							40	
Five No o	f								
Experime	ents								
	Examination Note Book(f				1(60	
experimer					10	,			
	kperiment(on	e for each			4()			
	sisting 5 stud								
group con	sisting 5 stud	entsj							

Name of	the Course: M.Tech. in Internet of Things					
Subject:	Subject: Mobile Applications and Services					
Course C	Course Code:PGIT(IoT)103C, Semester:1st					
PGIT(IoT	r)193C					
Duration	: 48 Hrs.	Maximum Marks: 200				
Teaching	g Scheme	Examination Scheme				
Theory: 3	3	End Semester Exam: 70				
Tutorial :	torial: 0 Attendance : 5					
Practical	:4	Continuous Assessment: 25				
Credit: 3	+ 2	Practical Sessional internal continuous evaluation:				
		40				
		Practical Sessional external examination: 60				
Aim:						
Sl. No.						
1.		form and users and be able to define and sketch a mobile				
	application					

2.	Understand the fundamentals, frameworks, and development lifecycle of mobile application platforms including iOS, Android, and PhoneGap						
3.	Design and develop a mobile application prototype in one of the platform (challenge project)						
Objective	31						
Sl. No.							
1.	This course presents the three main mobile platforms and their	r ecosyst	ems				
1.	namely Android, iOS, and PhoneGap/WebOS.	i ccosyst	cm3,				
2.	It explores emerging technologies and tools used to design and	imnleme	nt				
	feature-rich mobile applications for smartphones and tablets	mpremy					
3.	It also takes into account both the technical constraints relative capacity, processing capacity, display screen, communication in user interface, context and profile		0				
4.							
Pre-Requ	usite:						
Sl. No.							
1.	Wireless Communication and Mobile Computing						
2.							
0		TT (1				
Contents		Hrs./w	1				
Chapter 01	Name of the Topic Unit 1:Introduction:Introduction to Mobile Computing,	Hours 8	Marks 10				
02	Introduction to Android Development Environment, Factors in Developing Mobile Applications, Mobile Software Engineering, Frameworks and Tools, Generic UI Development Android User More on Uis: VUIs and Mobile Apps, Text-to-Speech Techniques, Designing the Right UI, Multichannel and Multimodal Uis, .	8	12				
	Storing and Retrieving Data, Synchronization and Replication of Mobile Data, Getting the Model Right, Android Storing and Retrieving Data, Working with a Content Provider						
03	Communications via Network and the Web: State Machine, Correct Communications Model, Android Networking and Web, Telephony Deciding Scope of an App, Wireless Connectivity and Mobile Apps, Android Telephony Notifications and Alarms: Performance, Performance and Memory Management, Android Notifications and Alarms, Graphics, Performance and Multithreading, Graphics and UI Performance, Android Graphics	10	12				
04	Putting It All Together : Packaging and Deploying, Performance Best Practices, Android Field Service App, Location Mobility and Location Based Services Android Multimedia: Mobile Agents and Peer-to-Peer Architecture, Android Multimedia	9	16				
05	Platforms and Additional Issues : Development Process, Architecture, Design, Technology Selection, Mobile App Development Hurdles, Testing, Security and Hacking , Active Transactions, More on Security, Hacking Android	8	15				
06	Recent trends in Communication protocols for IoT nodes,	5	5				

	mobile computing	techniques	in IOT, agen	ts based cor	nmunicatio	ıs	
	in IoT						
	Sub Total:					48	70
	Internal Ass		nination & Pr	eparation of	Semester		30
	Examination Total:	l					100
Practical:	Based on T	heorv					100
	e developed	-					
List of Pra	octical: Sl. No	o. 1& 2 comp	oulsory & at	least three	from the res	t)	
Assignme	nts:						
List of Bo Text Bool							
Name of A	uthor	Title of the	Book	Edition/IS	SSN/ISBN	Name of the Publisher	1e
Reference	e Books:			1		1	
Wei-Meng	g Lee	Beginning 4 Applicati Developm			y & Sons		
	uipment/ap	paratus for	aboratory e	xperiments	:		
Sl. No.							
21. 22.							
23.							
24.							
25.							
	ster Examin	ation Schen	ne. Max	kimum Marl	xs-70.	Time all	otted-
3hrs. Group	Unit	Obiective	Questions		Subjective	Questions	
r		(MCQ only v correct answ	with the				
		No of question	Total Marks	No of question	To answer	Marks per question	Total Marks
•	A T T	to be set	10	to be set			
A	ALL	10	10				
3	ALL			5	3	5	70
2	ALL			5	3	15	
pai	٠t.				t answer are to n answering ol		

be given on top o	f the quest	ion paper	r.				
Examination Scheme	for end s	emester	[.] examir	nation:			
Group	Chapter		Marks of each questionQuestion to be set			Question to be answered	
Α	ALL	1	L		10		10
В	ALL	5	5		5		3
С	ALL	1	15		5		3
Examination Scheme	for Pract	ical Sess	sional ex	kaminati	on:		
Practical Internal Ses	sional Co	ntinuou	is Evalua	ation			
Internal Examination	:						40
Five No of							
Experiments							
External Examination: E	Examiner-						60
Signed Lab Note Book(for	five					10	
experiments)							
On Spot Experiment(one						40	
group consisting 5 studen	its)						
V	/iva voce					10	

Name of t	he Course: M.Tech. in In	iternet of Things		
	achine learning	ternet of Things		
	de:PGIT(IoT)104A,	Semester: 1st		
PGIT(IoT)194A				
Duration :	48 Hrs.	Maximum Marks: 200		
Teaching Scheme		Examination Scheme		
Theory: 3		End Semester Exam: 70		
Tutorial: (0	Attendance : 5		
Practical:	4	Continuous Assessment: 25		
Credit: 3 + 2		Practical Sessional internal continuous evaluation: 40		
		Practical Sessional external examination: 60		
Aim:				
Sl. No.				
1.	Extract features that of various IOT application	can be used for a particular machine learning approach in ons.		
2.	-	rast pros and cons of various machine learning techniques of when to apply a particular machine learning approach.		
3.	To mathematically an paradigms.	alyse various machine learning approaches and		
Objective	 			
Sl. No.				
1.	-	of how to learn patterns and concepts from data without rammed in various IOT nodes.		
2.	To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.			
3.	Explore supervised a	nd unsupervised learning paradigms of machine learning.		
4.	To explore Deep lear	ning technique and various feature extraction strategies.		

Pre-Requi	isite:			
Sl. No.				
1.	Algorithm and Data Structure			
2.				
Contents		Hrs./w	eek	
Chapter	Name of the Topic	Hours	Marks	
01	Unit 1:	10	10	
	Supervised Learning (Regression/Classification)			
	Basic methods: Distance-based methods, Nearest-			
	Neighbours, Decision Trees, Nave Bayes			
	Linear models: Linear Regression, Logistic Regression,			
	Generalized Linear Models			
	 Support Vector Machines, Nonlinearity and Kernel Methods 			
	Beyond Binary Classification: Multi-class/Structured			
	Outputs, Ranking			
	Outputs, Kanking			
02	Unsupervised Learning	7	12	
	Clustering: K-means/Kernel K-means			
	• Dimensionality Reduction: PCA and kernel PCA			
	Matrix Factorization and Matrix Completion			
	Generative Models (mixture models and latent factor			
	models)			
03	Evaluating Machine Learning algorithms and Model	6	12	
	Selection, Introduction to			
	Statistical Learning Theory, Ensemble Methods (Boosting,			
04	Bagging, Random Forests)Sparse Modeling and Estimation, Modeling Sequence/Time-	10	16	
04	Series Data, Deep	10	10	
	Learning and Feature Representation Learning			
05	Scalable Machine Learning (Online and Distributed	10	15	
	Learning)			
	A selection from some other advanced topics, e.g., Semi-			
	supervised Learning,			
	Active Learning, Reinforcement Learning, Inference in			
	Graphical Models, Introduction to Bayesian Learning and			
0.6	Inference	_	_	
06	Recent trends classification applications.in various methods	5	5	
	for learning techniques IoT applications of machine learning Various models for and IoT			
	Sub Total:	48	70	
	Internal Assessment Examination & Preparation of Semester	-	30	
	Examination			
	Total:		100	

Skills to be	e developed:							
List of Prac	ctical: Sl. No.	1& 2 comp	ulsory &	at least thre	e from the res	t)		
Assignmen	its:							
List of Boo Text Books								
Name of A		Title of th	e Book	Edition/	ISSN/ISBN		ne of th lisher	ie
Reference	Books:							
1. Kev	in Murphy	Machine I A Probabi Perspecti	listic			МІТ	Press,	, 2012
	vor Hastie,	The Elem	ents of				inger 2	
Robert Tib Jerome Fri	•	Statistical	Learning	5,		onli	ely ava ine)	ulable
3.Christop	her Bishop,	Pattern R	ecognitio	n		Spr	inger, 2	2007.
_	-	and Mach Learning,	ine					
List of equ Sl. No.	ipment/appa	aratus for la	aboratory	v experimen	ts:			
26.								
27.								
28.								
29.								
30.								
End Semes 3hrs.	ter Examina	tion Schem	e. M	aximum Ma	rks-70.	T	ime all	otted-
Group	Unit	Objective	Questions	5	Subjective	Que	stions	
-		(MCQ only w			,	-		
	-	correct answ		N. C	m	D.C.		
		No of question	Total Marks	No of question	To answer		ks per stion	Total Marks
		to be set	Maiks	to be set		ques	Stion	Marks
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
 Only part 	-	ce type quest	ion (MCQ)	with one corre	ect answer are to	o be se	t in the o	objective
• Spec				ntain the order	in answering ol	ojectiv	e questi	ons should
	on Scheme fo			nination				
Group	on benefite ft	Chapter	1	s of each	Question to	be	Ouest	ion to be
r			quest		set		answ	
Α		ALL	1		10		10	

В	ALL	5		5	3	
С	ALL	15		5	3	
Examination Scheme fo	or Practical S	essional e	xaminatio	n:		
Practical Internal Sess	ional Continu	ious Evalu	ation			
Internal Examination:						40
Five No of						
Experiments						
External Examination: Ex	aminer-		•			60
Signed Lab Note Book(for f	ĩve			10		
experiments)						
On Spot Experiment(one fo				40		
group consisting 5 student	s)					
Vi	va voce			10		

	f the Course: M.Tech. in In	0			
	:Smart Sensors and Intern				
Course Code:PGIT(IoT)104B, PGIT(IoT)194B		Semester: 1st			
Duratio	n: 48 Hrs.	Maximum Marks: 200			
Teachin	ıg Scheme	Examination Scheme			
Theory	Cheory: 3End Semester Exam: 70				
Tutorial: 0		Attendance : 5			
Practica	al: 4	Continuous Assessment: 25			
Credit:	3 + 2	Practical Sessional internal continuous evaluation: 40			
		Practical Sessional external examination: 60			
Aim:					
Sl. No.					
1.	Understand the vision of	of IoT from a global context.			
2.	Determine the Market	Determine the Market perspective of IoT.			
3.	Use of Devices, Gateway	Use of Devices, Gateways and Data Management in IoT.			
4.	Application of IoT in In World Design Constrain	dustrial and Commercial Building Automation and Real- nts.			
5.	Building state of the art	t architecture in IoT.			
Objecti	ve:				
Sl. No.					
1.	Able to understand the	application areas of IoT			
2.	Able to realize the revo Networks	Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks			
3.	Able to understand bui	lding blocks of Internet of Things and characteristics			
Pre-Ree	 guisite:				
Sl. No.	L				
1.	Wireless Networks				

Contents	Hrs	Hrs./week			
Chapter	Name of the T	opic		Ηοι	
01	Unit 1: Enviro Monitoring: V	nmental Parameter Why measurement a		ng 7	10
02	Sensors: Wor Sensors for Pi Introduction Resistive, Sur Acoustic Wav Gas etc		12		
03	Important Ch Characteristic Fractional or sensing appli quality Impedance Sp Modelling of S Importance a		12		
04	Architecture features Fabr fabrication: S Sensing film o Vapor, Anodiz	e	16		
05	Interface Elec for Interfacing th in Smart Sens	ology	15		
06	Recent trends sensors and their archited		day to day life, evolving	5	5
	Sub Total:			48	70
		ment Examination & I	Preparation of Semester		30
	Examination		-		
	Total:				100
Skills to I List of Pr Assignme List of Bo	ents: ooks		t least three from the re	st)	
Text Boo Name of A		itle of the Book	Edition/ISSN/ISBN	Name of Publishe	

Referenc	e Books:							
	isuura, H., -M., Liu, Y.,	Smart Se IoT Front	nsors at the tier,			Spring Intern Publis	ation	al
-	yung, CM., H., Liu, Y.,	Smart Se Systems,	nsors and			Springer International Publishing		
	uipment/ap	paratus fo	r laboratory e	xperimen	ts:			
Sl. No.								
31.								
32.								
<u> </u>								
<u> </u>								
	ester Examin	ation Sche	eme. Max	ximum Ma	rks-70.	Tim	e allo	tted-
Group	Unit	Objectiv (MCQ only correct ar			Subjective	e Questio	ons	
		No of question to be set	Total Marks	No of question to be set	To answer	Marks p questio	· · · · ·	Total Marks
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
pa • Sp be	rt. ecific instructi given on top o	on to the stu of the question	dents to mainta on paper.	in the order	ect answer are to • in answering ob			
	tion Scheme		mester exami					
Group		Chapter	Marks o questio		· ·		be Question to be answered	
Α		ALL	1		10	1		
B		ALL	5		5	3		
C	lan C-l	ALL	15 15		5	3		
			al Sessional e tinuous Evalu)n:			
	Examination		unuous Evalu	ativii				40
Five No of		•						ŦU
Experime								
External E	xamination: I	Examiner-						60
0	Note Book(for	five			10			
experimen		for on -l-						
	periment(one sisting 5 studer	nts)			40			
		Viva voce			10			

Nomesfel	he Courses M Tech in Internet	of Things				
	he Course: M.Tech. in Internet ogic And Functional Programm					
		ester: 1st				
PGIT(IoT)						
Duration:	48 Hrs. Max	imum Marks: 200				
Teaching	Scheme Exar	nination Scheme				
Theory: 3	End	Semester Exam: 70				
Tutorial: (ndance : 5				
Practical:	4 Cont	tinuous Assessment: 25				
Credit: 3 +	+ 2 Prac 40	tical Sessional internal contin	uous eva	luation:		
		tical Sessional external exami	nation: (50		
Aim:						
Sl. No.						
1.	Understanding of the theory For IoT.	and practice of functional and lo	gic progr	amming		
2.	The ability to write functional and logic programs for nodes in IoT.					
3.	The ability to solve problem	s in and using functional and logi	c prograi	nming.		
Objective	•					
Sl. No.						
1.		t on the theoretical and practical ramming tools in logic programm	-			
2.	To introduce basics of functi programming for nodes in Io	onal programming and constrain T.	t logic			
3.	Introduction into formal com paradigms, basic knowledge	cepts used as a theoretical basis and practical experience.	for both			
Pre-Requi	isito:					
Sl. No.						
1.	Computer Programming, Ma	thematical Logic				
2.						
Contents	1		Hrs./w	eek		
Chapter	Name of the Topic		Hours	Marks		
01	Unit 1: Proposition Logic: In Functional Paradigm,	troduction of logic and antic Table, Problem Solving	5	10		
02		natic Propositional Logic: Rules nt Calculus, Axiomatic Systems, Resolving Arguments	7	12		
03	Introduction to Predicate Lo Quantifiers, Functions, First	gic Objects, Predicates and Order Language, Quantifiers, ion, An Axiomatic System for	9	12		

	Complete	ness, Axioma	tic Semanti	c and Prog	ramming			
04	Semantic	Tableaux & R	Resolution i	n Predicate	e Logic:		13	16
	Semantic '	Tableaux, Ins	stantiation	Rules, Prob	lem-solving	in		
	Predicate	Logic, Norma	al forms, He	erbrand Uni	iverses and H	-I-		
	interpreta	tion, Resolut	tion, Unifica	ation, Resol	lution as a			
	computing	g Tool, Nonde	eterministi	c Programn	ning,			
	Incomplet	e Data Struc	ture,	_	-			
	Second Or	der Program	nming in Pro	olog, Logic (Grammars:			
	Definite C	lause Gramm	nar, A Gram	mar Interp	reter.			
05	Lazy and I	Eager Evaluat	tion strateg	ies: Evalua	tion Strategi	es,	9	15
	Lazy Evalı	iation: Evalu	ation Orde	r and strict	ness of funct	ion,		
	Programn	ning with lazy	y evaluatio	n, Interactiv	ve functional	l		
		Delay of unn			, Infinite Dat	a		
		Eager Evalua						
06		ends in logica	l and funct	ional progr	amming,		5	5
	predicate	•						
		us evaluation	n strategies					
	Sub Total:						48	70
		sessment Exa	mination & I	Preparation	of Semester			30
	Examinatio	on						100
Descetteral	Total:	1						100
Practical:	Based on T	neory						
Skille to be	developed							
SKIIIS LU DE	euevelopeu	li						
List of Prov	ctical SL No	o. 1& 2 comp	ulcory & at	loget throo	from the rec	+)		
	Lucal. SI. No	. 1& 2 comp		least till ee	ii olii tile i es	IJ		
Assignmen	nts.							
issignmen								
List of Boo	ks							
Text Books								
Name of A	uthor	Title of the	Book	Edition/I	SSN/ISBN	Nar	ne of th	e
				,	,	Pub	olisher	
Reference	Books:					•		
1. Joh	n Kelly,	"The Essenc	ce of			Pre	ntice-H	all India.
	-	Logic",						
2. Sar	oj	"Logic and H	Prolog			Nev	v Age	
Kaushik,		Programmi	ng",			Inte	ernatio	nal Itd
List of equ	ipment/ap	paratus for la	aboratory e	xperiments	5:			
Sl. No.								
36.								
37.								
	ter Examin	ation Schem	e. Max	ximum Mar	ks-70.	Т	ime allo	otted-
3hrs.	Unit	Ohiostina	Jugationa		Cubio ati	0	ations	
Group	Unit	Objective ((MCQ only w	•		Subjective	: Que	500115	
		correct answ						
		No of	Total	No of	To answer	Mar	ks per	Total

		question	Marks	question		quest	ion	Marks
		to be set		to be set		1		
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
• 0	nly multiple cho	oice type que	stion (MCQ) wi	th one corre	ct answer are to	be set	in the c	objective
pa	art.							
				in the order	in answering ob	jective	questi	ons should
	e given on top o							
Examina	tion Scheme							
Group		Chapter	Marks o		Question to b	be	Quest	ion to be
			questio	n	set		answe	ered
Α		ALL	1		10		10	
В		ALL	5		5		3	
С		ALL	15		5		3	
Examina	tion Scheme	for Practica	al Sessional e	xaminatio	n:			
Practical	Internal Ses	sional Cont	inuous Evalu	ation				
Internal	Examination	•						40
Five No o	f							
Experime	ents							
External l	Examination: E	Examiner-						60
-	o Note Book(for	five			10			
experimer								
	xperiment(one				40			
group con	sisting 5 studen							
		/iva voce			10			

	the Course:M.Tech. in In Research Methodology a	6
Course Co	ode: PGIT(IoT)105	Semester: 1st
Duration	: 36 hours	Maximum Marks:100
Teaching	Scheme	Examination Scheme
Theory:2		End Semester Exam:70
Tutorial:0		End Semester Exam:70
Practical:()	Attendance : 5
Credit: 2		Continuous Assessment: 25
Aim:	_	
Sl. No.		
1.	Understand research	problem formulation.
2.	Analyze research rela	ated information
3.	Follow research ethic	cs
Objective		
Sl. No.		
1.	Understand research	problem formulation.

2.	Analyze research related information							
3.	Follow research ethics							
4.	Understand that today's world is controlled by Computer, Info Technology, but tomorrow world will be ruled by ideas, conce							
5.	Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasise the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.							
б.	Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.							
Pre-Requi								
Sl. No.								
7.								
8.								
Contents		Hrs./w	eek					
Chapter	Name of the Topic	Hours	Marks					
01	Meaning of research problem, Sources of research problem,	6	14					
	Criteria Characteristics of a good research problem, Errors							
	in selecting a research problem, Scope and objectives of							
	research problem. Approaches of investigation of solutions							
	for research problem, data collection, analysis,							
02	interpretation, Necessary instrumentations. Effective literature studies approaches, analysis Plagiarism,	6	10					
02	Research ethics	0	10					
03	Effective technical writing, how to write report, Paper	6	14					
	Developing a Research Proposal, Format of research							
	proposal, a presentation and assessment by a review							
	committee.							
04	Nature of Intellectual Property: Patents, Designs, Trade and	6	14					
	Copyright. Process of Patenting and Development:							
	technological research, innovation, patenting, development.							
	International Scenario: International cooperation on							
	Intellectual Property. Procedure for grants of patents,							
05	Patenting under PCT. Patent Rights: Scope of Patent Rights. Licensing and transfer	6	14					
05	of technology. Patent information and databases.	0	14					
	Geographical Indications.							
06	New Developments in IPR: Administration of Patent System.	6	4					
	New developments in IPR; IPR of Biological Systems,							
	Computer Software etc. Traditional knowledge Case Studies,							
	IPR and IITs.							
	Sub Total:	36	70					
	Internal Assessment Examination & Preparation of Semester Examination	4	30					
	Total:	40	100					

		o. 1& 2 comp	ulsory & at I	least three f	rom the res	t)	
List of Boo Text Books							
Name of A		Title of the	Book	Edition/IS	SN/ISBN	Name of th Publisher	ie
Reference	Books:						
1. StuartMelv ayneGodda	villeandW	"Researchn gy: an introductio science & e students"	n for				
	WayneGoddardand "ResearchMethodolo StuartMelville, gy: An Introduction"						
Ranjit Kun	Ranjit Kumar,		"Research Methodology: A Step by Step Guide for beginners"		n,		
T. Ramapp Chand,	a, S.	"Intellectua Bights Und		2008			
Robert P. N	Robert P. Merges," IntellectualPeter S. Menell,Property in New		al New	2016.			
Asimov,		"Introducti Design", Pr Hall,	on to	1962.			
Mayall,		"Industrial	Design",			McGraw H	
Halbert,		"Resisting Intellectual Property",	l			Taylor & F Ltd ,2007.	rancis
Niebel,		"Product De	<u> </u>			McGraw H	ill, 1974.
	ipment/ap	paratus for la	aboratory e	xperiments:			
Sl. No.							
1 2							
3							
End Semes 3hrs.	ter Examir	nation Schem	e. Max	imum Mark	s-70.	Time all	otted-
Group	Unit	Objective (MCQ only w	vith the		Subjective	Questions	
		correct answ No of question to be set	ver) Total Marks	No of question to be set	To answer	Marks per question	Total Marks

Α	All	10						
			10	5	3	15	70	
B	All							
				5	3	45		
С	All							
Only	y multiple cho	ice type quest	ion (MCQ) wit	h one correct	answer are to	be set in the o	objective	
part	t.							
• Spe	cific instructio	on to the stude	nts to maintai	n the order in	answering ob	jective questi	ons should	
be g	iven on top of	f the question j	paper.					
Examinati	on Scheme f	for end seme	ester examin	nation:				
Group		Chapter	Marks of each		Question to b	e Quest	Question to be	
			question		et	answe	ered	
Α		ALL	1	1	.0	10		
В		ALL	5	5		3		
С		ALL	15	5	6	3		

Subject: English for research pape	r writing	
Course Code:PGIT(IoT)106A	Semester: 1st	
Duration: 24 hours	Maximum Marks:100	
Teaching Scheme	Examination Scheme	
Theory:02	End Semester Exam:70	
Tutorial:	End Semester Exam:70	
Practical:	Attendance : 5	
Credit:02	Continuous Assessment: 25	

Aim:						
Sl. No.						
1.	Understand that how to improve your writing skills and level of readability					
2.	Learn about what to write in each section					
3.	Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission					
Objective	· · · · · · · · · · · · · · · · · · ·					
Sl. No.						
1.	Understand that how to improve your writing skills and level of readability					
2.	Learn about what to write in each section					
3.	Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission					
Pre-Requ	isite:					
Sl. No.						
1.	Basic Knowledge of English					
2.						
Contents		Hrs./w	eek			
Chapter	Name of the Topic	Hours	Marks			
01	Planning and Preparation, Word Order, Breaking up long sentences, Structuring Paragraphs and Sentences, Being	4	14			

2. Da 3. Hi 4. Ad Wa	oldbort R ay R ghman N Irian allwork,	(2006) Writing for Science, (2006) How to Write and Publish a Scientific Paper, (1998), Handbook of Writing for the Mathematical Sciences, English for Writing Research Papers, mation Scheme. Max	kimum Marks-70.	Yala Pres Goo Can Uni SIAI Hig Dor Heid 201	e Unive ss (ava ogle Boo obridge versity M. hman's inger N odrecht delberg	ilable on oks) Press Sbook. Jew York g London
1. Go 2. Da 3. Hi 4. Ad Wa	oldbort R ay R ghman N Irian allwork,	Science, (2006) How to Write and Publish a Scientific Paper, (1998), Handbook of Writing for the Mathematical Sciences, English for Writing Research Papers,		Yala Pres Goo Can Uni SIAI Hig Dor Heid 201	e Unive ss (ava ogle Boo obridge versity M. hman's inger N drecht delber 1.	ilable on oks) Press Sbook. Jew York g London
1. Go 2. Da 3. Hi	oldbort R ay R ghman N	Science, (2006) How to Write and Publish a Scientific Paper, (1998), Handbook of Writing for the Mathematical Sciences,		Yale Pres Goo Can Uni SIAI Hig	e Unive ss (ava ogle Boo obridge versity M. hman's	ilable on oks) e Press sbook.
1. Go	oldbort R	Science, (2006) How to Write and Publish a		Yale Pres Goo Can	e Unive ss (ava gle Boo ibridge	ilable on oks) e
1. Go	oldbort R	Science,		Yale Pres Goo	e Unive ss (ava gle Boo	ilable on oks)
Reference	e Books:			Pub		
				Pub		
				Pub	nsner	
List of Bo Text Bool Name of A	ks:	Title of the Book	Edition/ISSN/ISBN		ne of th lisher	16
Assignme	ents: Based	on theory				
	Examinati Total:				28	100
	Internal A	ssessment Examination &		4	30	
		bethe first- time submiss			24	70
06	Discussio	itingthe Results, skills ar on, skills are needed whe rases, how to ensure paj	n writing the Conclusion	ns	4	14
05	Review o	iting an Introduction,ski f the Literature, needed when writing th	e Methods, skills neede	d	4	14
04	key skills needed w		4	4		
)3		f the Literature, Methods ons, TheFinal Check.	s, Results, Discussion,		4	10
	Hedging a Sections		4	14		
02	Clarifying	7471 D. 17471 . 777 1 17				

		correct ansv	ver)				-
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
Α	ALL	10	10				
В	ALL			5	3	5	70
С	ALL			5	3	15	

• Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.

• Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:							
Group	Chapter	Marks of each	Question to be	Question to be			
		question	set	answered			
Α	ALL	1	10	10			
В	ALL	5	5	3			
С	ALL	15	5	3			

	the Course: M.Tech. in I	nternet of Things			
	Disaster management	Comparison 1 at			
Course Code:PGIT(IoT)106B Duration:24 hrs		Semester: 1st			
		Maximum Marks:100			
Teaching	,,	Examination Scheme			
Theory:02		End Semester Exam:70			
Tutorial:0		End Semester Exam:70			
Practical:		Attendance : 5			
Credit: 02		Continuous Assessment: 25			
Aim:					
Sl. No.					
1.	learn to demonstrate	e a critical understanding of key concepts in disaster risk			
	reduction and huma				
2.	approaches, plannin	l the strengths and weaknesses of disaster management g and programming in different countries, particularly or thecountries they work in			
3.					
Objective					
Sl. No.					
1.		e a critical understanding of key concepts in disaster risk nitarian response.			
2.	approaches, plannin	reduction and humanitarian response. critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or thecountries they work in			
3.	critically evaluate di and practice from m	saster risk reduction and humanitarian response policy ultiple perspectives.			
	 develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations. 				
4.	-	U 1			
	relevance in specific	U 1 1			
4. Pre-Requ Sl. No.	relevance in specific	U 1			

Contents		Hrs./v	veek		
Chapter	Name of	he Topic		Hours	
01	Introduct Disaster: Between Disasters And Mag Repercus Loss Of H Natural D Tsunamis Avalanch Nuclear H	tion Definition, Factors An Hazard And Disaster; J : Difference, Nature, T nitude. 4 sions Of Disasters And uman And Animal Life Disasters: Earthquakes s, Floods, Droughts And es, Man-made disaster Reactor Meltdown, Indu	ypes Hazards: Economic Dam , Destruction Of Ecosyste , Volcanisms, Cyclones, I Famines, Landslides An	age, m. d	15
02	Study Of Droughts And Aval Hazards		rone To Floods And o Cyclonic And Coastal e To Tsunami; Post-Disas	5 ter	15
03	Disaster Prepared Disaster Ri Da	Preparedness And Man ness: Monitoring Of Pl Or Hazard; Evaluation sk:ApplicationOf Re ata FromMeteorolog ports: Governmental A	nenomena Triggering A Of mote Sensing, ical And Other Agencies,	5	15
04	Risk Asse Disaster Reductio Techniqu Assessme Risk Asse	5 Risk	10		
05	Disaster Meaning, Emerging In Mitiga	Mitigation Concept And Strategie Trends	es Of Disaster Mitigation, tion And Non-Structural	4	15
	Sub Tota	•		24	70
		ssessment Examination	& Preparation of Semester	4	30
	Total:			28	100
Assignmer List of Boo Text Book		on theory			
Name of A		Title of the Book	Edition/ISSN/ISBN	Name of th Publisher	ie

Referenc	o Doolro							
	e Books: Nishith,	"Disaster				New	Rova	l book
Singh AK	•		ent in India:				pany.	
		Perspectiv	•					
0 0		and strate	0					<u>, 11 C</u>
2. Sa PardeepI	hni, St Al	" Disaster Experience	•					lall of 7 Delhi.
(Eds.),	J.AI.	Reflection				Inui	a, new	Denn.
<u> </u>			Disaster Administration and Management Text and Case Studies",			Deep &Deep Publication Pvt. Ltd New Delhi.		n Pvt. Ltd.,
End Seme	ester Exami	nation Scher	ne. Max	imum Ma	rks-70.	Ti	me all	otted-
3hrs.								
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions				
						Marks per Total		
		No of question	Total Marks	No of question	To answer	quest	-	Total Marks
		to be set		to be set		-1		
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
	v	noice type ques	stion (MCQ) wit	th one corre	ect answer are to	be set	in the	objective
be	given on top	of the question	i paper.		in answering of	ojective	questi	ons should
	tion Scheme		lester exami					
Group		Chapter	Marks o question		Question to l set	be	Quest	tion to be ered
A		ALL	1		10		<u>10</u>	
В		ALL	5		5		3	
С		ALL	15		5		3	

Name of the Course: M.Tech. in Internet of Things Subject:Sanskrit for technical knowledge					
Course Code:PGIT(IoT)106C					
Duration: 24 hours	Semester: 1st				
Teaching Scheme	Maximum Marks:100				
Theory:02	Examination Scheme				
Tutorial:0	End Semester Exam:70				
Practical:0	End Semester Exam:70				
Credit: 02	Attendance : 5				
	Continuous Assessment: 25				
Aim:					
Sl. No.					
1. Understanding basic S	anskrit language				

2.	Ancient Sanskrit literature about science & technology can be understood							
3.	Being a logical language will help to develop logic in students							
Objective	2:							
Sl. No.								
1.	To get a wo world	To get a working knowledge in illustrious Sanskrit, the scientific language in the world						
2.	Learning of	Sanskrit to improve bi	rain functioning					
3.	Learning of subjects	Sanskrit to develop th	e logic in mathematics, s	science	e & othe	r		
4.		the memory power						
5.		, ,	d with Sanskrit will be a	ble to	explore	the		
6.	huge know							
Pre-Requ	isite:							
Sl. No.								
1.								
2.								
Contents					Hrs./w	eek		
Chapter	Name of the	e Topic			Hours	Marks		
01	Alpł	abets in Sanskrit,			8	25		
	Past	/Present/Future Tense	<u>.</u>					
		ple Sentences	-,					
	• Shiri	pie Sentences						
02	• Ord	er			8	25		
		oduction of roots			Ū			
	• Tecl	nical information abo	ut Sanskrit Literature					
03	Tecl	nnical concepts of Engi	neering-Electrical,		8	20		
	Mec	hanical, Architecture, M	Aathematics					
	Sub Total:				24	70		
		essment Examination & P	reparation of Semester		4	30		
	Examination				20	100		
	Total:				28	100		
Accient	mta Dacad a	a the arm						
Assignme	ents: Based of	ntheory						
List of Bo	okc							
Text Boo								
Name of		Title of the Book	Edition/ISSN/ISBN	Nam	e of the	<u> </u>		
Name of A	Autioi	THE OF THE DOOK			lisher			
				1 ubi	iisiici			
				-				
				-				
Referenc	e Books							
	r.Vishwas,	"Abhyaspustakam" –		Bhai	rti Publi	ication		
Samskrit	•				Delhi	cation,		
Sansthan								
Delhi Pul								

2. PrathamaDe eksha-		"Teach Yourself Sanskrit"				tri, San	Rashtr skrit	
3. Suresh Soni,		"India's Glorious Scientific Tradition"					an boo v Delhi	oks (P) Ltd.,
End Sem 3hrs.	ester Examir	ation Schem	e. Max	imum Ma	rks-70.	T	ime all	otted-
Group	Unit	Objective (MCQ only w correct answ	vith the	Subjective Questions				
		No of question to be set	Total Marks	No of question to be set	To answer		ks per stion	Total Marks
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
pa ● SI	art.	on to the stude	ents to maintai		ect answer are to			
Examina	tion Scheme	1	1					
Group		Chapter	Marks o question		Question to be set		Question to be answered	
Α		ALL	1		10		10	
B			5		5		3	
С		ALL	15		5		3	

Name of	the Course: M.Tech. in In	iternet of Things			
	alue education				
Course C	ode:PGIT(IoT)106D	Semester: 1st			
Duration	: 36 hours	Maximum Marks:100			
Teaching	s Scheme	Examination Scheme			
Theory:02	2	End Semester Exam:70			
Tutorial:(1	End Semester Exam:70			
Practical:	0	Attendance : 5			
Credit:02		Continuous Assessment: 25			
Aim:					
Sl. No.					
1.	Knowledge of self-development				
2.	Learn the importance of Human values				
3.	Developing the overall personality				
Objective	9:				
Sl. No.					
1.	Understand value of education and self- development				
2.	Imbibe good values in students				
3.	Let the should know about the importance of character				

Sl. No.					
1.					
2.					
		Hrs./w			
Contents					
Chapter	Name of the Topic	Hours	Marks		
01	 Values and self-development -Social values and individual attitudes. Work ethics, Indian vision of humanism. Moral and non- moral valuation. Standards and principles. Value judgements 	6	10		
02	 Importance of cultivation of values. Sense of duty. Devotion, Self-reliance. Confidence, Concentration. Truthfulness, Cleanliness. Honesty, Humanity. Power of faith, National Unity. Patriotism.Love for nature,Discipline 	6	20		
03	 Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline. Punctuality, Love and Kindness. Avoid fault Thinking. Free from anger, Dignity of labour. Universal brotherhood and religious tolerance. True friendship. Happiness Vs suffering, love for truth. Aware of self-destructive habits. Association and Cooperation. Doing best for saving nature 	6	20		
04	 Character and Competence –Holy books vs Blind faith. Self-management and Good health. Science of reincarnation. Equality, Nonviolence, Humility, Role of Women. All religions and same message. Mind your Mind, Self-control. Honesty, Studying effectively 	6	20		
		a :			
	Sub Total:	24	70		
	Internal Assessment Examination & Preparation of Semester Examination	4	30		
	Total:	28	100		

List of Bo								
Text Books: Name of Author		Title of the Book		Edition/ISSN/ISBN		Name of the Publisher		
Referenc	e Books:							
Chakroborty, S.K.		"Values and Ethics for organizations Theory and practice"				Oxford Ur Press, Nev		
Fnd Sem	ester Fyami	nation Schen	ne May	imum Mai	rks-70	Time al	lotted-	
3hrs.		nation Schen	пс. мал		I K3-7 0.	i inic ai	lotteu-	
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions				
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks	
А	ALL	10	10					
В	ALL			5	3	5	70	
С	ALL			5	3	15		
pa • Sp	art. Decific instruct		ents to maintai		ct answer are to in answering ol		·	
		for end sem	ester exami			1		
Group		Chapter Marks o		e		-		
۸		1	question	1	set	answ	answered	
Δ		ΔΙΙ	-		10	10		
AB		ALL ALL	1		10 5	10 3		

<u>Semester II</u>

	of the Course: M.Tech. in Internet					
		ester: 2 nd				
		imum Marks: 200				
Teaching Scheme		mination Scheme				
Theor	8	Semester Exam: 70				
Tutori	y -	endance : 5				
		tinuous Assessment: 25				
Practical: 4 Credit: 3 + 2		Practical Sessional internal continuous evaluation:				
	Pra	ctical Sessional external examin	nation: 6	0		
Aim:						
SI.						
No.						
1.	-	nt architectures with respect to va	rious pa	rameters		
2.	Analyze performance of differen	t ILP techniques				
3.	Identify cache and memory relat	ted issues in multi-processors				
Ohiad						
Object Sl.	tive:					
-						
No.						
1.	Understand the micro-architect					
2.	Learn about the various techniques used to obtain performance improvement and					
2	power savings in current proces	sors				
3.						
Pre-R	equisite:					
Sl.						
No.						
1.	Computer Architecture					
2.	Distributed Computing					
	F F S					
Contents			Hrs./w	eek		
Chap	Name of the Topic		Hours	Marks		
ter						
01	FUNDAMENTALS OF COMPUTER		14	15		
	Computer Architecture and Orga					
	of Computer Design, Technology					
	Analysis (3L)					
	Parallel Processing Architectures- Taxonomy- SISD, MISD,					
	SIMD,MIMD, PRAM models (3L)					
	Data and Resource Dependencies, Program Partitioning and					
	Scheduling, Control Flow vs. Dat					
02	INSTRUCTION LEVEL PARALLEL	14	20			
	Network topologies-Static, Dyna					
	RISC vs. CISC, Memory Hierarchy					
	Concepts of Pipelining, Instructi					
	pipelining, arithmetic pipelines.	(4L)				

03	DATA-LEVEL PARALLELISM I Multiprocessors- Multistage Networks, Cache Coherence, Synchronization, Message- passing (4L) Vector Processing Principles- Instruction types, Compound, Vector Loops, Chaining (4L) Array Processors- Structure, Algorithms (3L)					10	20	
04	Algorithms (3 DATA-LEVEL I Data Flow Arc DFA, VLSI Con Parallel Progr	PARALLELISM hitecture- Gr putations (4	raphs. Petri L)		10	15		
	Sub Total:						48	70
	Internal Assess	ment Examina	ntion & Pren	aration of Ser	nester		40	30
	Examination							50
	Total: cal: Based on T							100
	nments: Books Books:							
	of Author	Title of the	Book	Edition/IS	SN/ISBN		me of th blisher	ie
John L and Da Patter		"Computer Architectur Quantitativ Approach",		Fifth Editi	on, 2012.	Morgan Kaufmanı Elsevier,		aufmann/
Kai Hv Briggg	wang and A. gs	Computer Architecture and Parallel Processing-		International Edition,		Mc	Graw H	ill
D. Sim P. Kac	a, T. fountain, suk,	Advanced C Architectur	-				arson	
A.Gup		Parallel Con Architectur	-			Elso	evier	
Refere	ence Books:					1		
				_				
<u>List of</u> Sl. No.	fequipment/ap	paratus for la	aboratory e	experiments	•			
<u>51. NO.</u> 38								
39								
	emester Examir	ation Schem	e. Max	kimum Mark	ks-70.	Т	'ime all	otted-
Grou p	Unit	Objective ((MCQ only w correct answ	vith the		Subjective	e Que	stions	
		No of question	Total Marks	No of question	To answer		·ks per stion	Total Marks

		to be set		to be set				
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
•	only multiple en	oice type que	stion (MCQ) wi	th one corre	ect answer are to	be set	t in the o	objective
	part.							
•	Specific instructi			in the order	r in answering of	ojectiv	e questi	ons should
F	be given on top o							
-	nination Scheme						0	• • •
Groi	ıp	Chapter	Marks o		Question to l	be	-	ion to be
•			questio	n	set		answe	erea
<u>A</u>		ALL	1		10		10	
B		ALL	5		5		3	
С		ALL	15		5		3	
	nination Scheme				on:			
	tical Internal Ses		inuous Evalı	ation				
	rnal Examination							40
Five	No of							
Expe	eriments							
	rnal Examination:							60
	d Lab Note Book(fo	r five			10			
I	riments)	<u> </u>						
	oot Experiment(one				40			
grou	o consisting 5 stude	itsj Viva voce			10			
		viva voce			10			

Name of t	he Course: M.Tech. in I	nternet of Things			
Subject: W	Vireless and Sensor Netwo	rks			
	de: PGIT(IoT)202,	Semester: 2 nd			
PGIT(IoT)2					
Duration :	48 Hrs.	Maximum Marks: 200			
Teaching	Scheme	Examination Scheme			
Theory: 3		End Semester Exam: 70			
Tutorial:	0	Attendance : 5			
Practical:	4	Continuous Assessment: 25			
Credit: 3 +	- 2	Practical Sessional internal continuous evaluation:			
		40			
		Practical Sessional external examination: 60			
Aim:					
Sl. No.					
1.		cations of wireless sensor networks, describe the concepts, ences underlying the design, implementation, and use of vorks,			
2.	Propose, implement, and evaluate new ideas for solving wireless sensor network design issues				
3.					
Objective	•				

Sl. No.			
1.	Students should be able to list various applications of wireless	s sensor	
	networks, describe the concepts, protocols, and differences up	nderlying	g the
	design		
2.	Implementation, and use of wireless sensor networks. Also im	plement	and
	evaluate new ideas for solving wireless sensor network design	n issues.	
3.			
Pre-Requi	isite:		
Sl. No.			
1.	Computer Architecture		
2.	Networking		
		1	
Contents	1	Hrs./w	
Chapter	Name of the Topic	Hours	Marks
01	Sensor networks overview:	4	10
	Introduction, Applications of WSN, Range of Applications,		
	Designissues		
02	Basic Wireless Sensor Technology:	6	10
	Sensor node architecture, Hardware and Software, Sensor		
	Taxonomy, WSN Operating Environment, Trend		
03	Wireless Transmission Technology and Systems:	6	10
	Introduction, Radio Technology Primer, Propagation &		
	Propagation		
	Impairments, Available Wireless Technologies		
04	Fundamentals of MAC Protocols:	6	10
	Performance Requirements, Common Protocols,		
	MAC Protocols for WSNs, Schedule-Based Protocols, Random		
	Access-Based Protocols, Sensor-MAC Case Study, Protocol		
	Overview, Periodic Listen and Sleep Operations, Schedule		
	Selection		
	and Coordination, Schedule Synchronization, Adaptive		
	Listening, Access Control and Data Evaluation		
05	Access Control and Data Exchange.	6	10
05	Routing Protocols for Wireless Sensor Networks: Routing Challenges and Design Issues in Wireless, Sensor	6	10
	Networks,		
	Network Scale and Time-Varying Characteristics, Resource		
	Constraints, Sensor Applications Data Models, Routing		
	Strategies in Wireless Sensor Networks, WSN Routing		
	Techniques		
	Flooding and its Variants, Sensor Protocols for Information		
	via Negotiation, LowEnergy Adaptive Clustering Hierarchy,		
	Power-Efficient Gathering in Sensor Information Systems,		
	Directed Diffusion, Geographical Routing.		
06	Transport Control Protocols for Wireless Sensor Networks:	6	5
	Transport Protocol Design Issues, Examples of Existing		
	TransportControl Protocols, CODA (Congestion Detection		
	and Avoidance),		
	ESRT (Event-to-Sink Reliable Transport), RMST (Reliable		
	Multisegment Transport), PSFQ (Pump Slowly, Fetch		
	Quickly),		
	GARUDA, ATP (Ad Hoc Transport Protocol), Problems with		
	Transport Control Protocols, Performance of Transport		

	Control P	rotocols, Congestion, F	Packet Loss Recovery.			
07	Middlewa	re for Wireless Sensor	r Networks:		6	5
		ion, Network Manager	nent Requirements,			
	Tradition		Simple Network Manager	nont		
		•	Simple Network Managen ap, Network Managemen			
	Design	relection operation in	ap) need of a managemen	•		
	-	ample of Management	Architecture: MANNA, O	ther		
		lated to Network Mana	ngement, Naming,			
	Localizati					
08		nce and Traffic Manag			4	5
			ols, Routing Protocols, nce Modeling of WSNs,			
	-	nce Metrics, Basic Mod	C			
09		g Systems for Wireless			4	5
	Operating	g System Design Issues	s, Examples of MANTIS,			
	SenOS, Ma	<u> </u>				
	Sub Total				48	70
	Internal As Examination		& Preparation of Semester			30
	Total:					100
Practical:	Based on T	heory				
Assignmeı	nts:	o. 1& 2 compulsory & a	at least three from the re	st)		
List of Pra Assignmei List of Boo Text Book	nts: oks	o. 1& 2 compulsory & a	at least three from the re	st)		
Assignmei List of Boo	nts: oks s:	o. 1& 2 compulsory & a	at least three from the re Edition/ISSN/ISBN	_	ne of t	he
Assignme List of Boo <u>Text Book</u> Name of A	nts: oks s: uthor			Nam Pub	lisher	
Assignmer List of Boo <u>Text Book</u> Name of A [1] Kazem	nts: oks s: uthor Sohraby,	Title of the Book		Nam	lisher	
Assignmei List of Boo Text Book Name of A [1] Kazem Daniel Mir	nts: ks s: uthor Sohraby, 10li,	Title of the Book Wireless Sensor		Nam Pub	lisher	
Assignme List of Boo <u>Text Book</u> Name of A	nts: ks s: uthor Sohraby, 10li,	Title of the Book		Nam Pub	lisher	
Assignmei List of Boo Text Book Name of A [1] Kazem Daniel Mir	nts: oks s: uthor Sohraby, noli, i.	Title of the Book Wireless Sensor		Nam Pub Wile	lisher ey	
Assignmer List of Boo Text Book Name of A [1] Kazem Daniel Mir TaiebZnat [2] Ananth Swami, Qir	nts: s: uthor Sohraby, noli, i. uram ng Zhao,	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal		Nam Pub Wile	lisher ey	
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho	nts: s: uthor Sohraby, noli, i. uram ng Zhao,	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and		Nam Pub Wile	lisher ey	
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub	nts: oks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications		Nam Pub Wile Johr	lisher ey 1 Wile	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub	nts: oks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications Ad Hoc Wireless		Nam Pub Wile Johr	lisher ey 1 Wile	
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub	nts: oks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications Ad Hoc Wireless Networks:		Nam Pub Wile Johr	lisher ey 1 Wile	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub	nts: oks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications Ad Hoc Wireless		Nam Pub Wile Johr	lisher ey 1 Wile	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub [3] Murthy [4] Edited	nts: ks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang / Pub by C. S.	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications Ad Hoc Wireless Networks: Architectures and Protocols Wireless sensor		Nam Pub Wile Johr	lisher ey 1 Wile	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub [3] Murthy [4] Edited Raghaven	nts: Sks s: uthor Sohraby, noli, i. nam ng Zhao, ong, Lang / Pub by C. S. dra Pub	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications Ad Hoc Wireless Networks: Architectures and Protocols Wireless sensor networks		Nam Pub Wile Johr Pear	lisher ey n Wile rson E nger	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub [3] Murthy [3] Murthy [4] Edited Raghaveno [5]Sridhar	nts: Sks s: uthor Sohraby, noli, i. nam ng Zhao, ong, Lang / Pub by C. S. dra Pub	Title of the Book Wireless Sensor Network Wireless Sensor Networks Signal Processing and Communications Ad Hoc Wireless Networks: Architectures and Protocols Wireless sensor networks Fundamentals of		Nam Pub Wile Johr	lisher ey n Wile rson E nger	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub [3] Murthy [4] Edited Raghaveno [5]Sridhar S.Iyengar,	nts: oks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang / Pub by C. S. dra Pub	Title of the BookWireless Sensor NetworkWireless Sensor Networks Signal Processing and CommunicationsAd Hoc Wireless Networks: Architectures and ProtocolsWireless sensor networksWireless sensor networksFundamentals of Sensor Network		Nam Pub Wile Johr Pear	lisher ey n Wile rson E nger	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub [3] Murthy [4] Edited Raghaveno [5]Sridhar S.Iyengar, NandanPa	nts: oks s: uthor Sohraby, noli, i. uram ng Zhao, ong, Lang / Pub by C. S. dra Pub rameshw	Title of the BookWireless Sensor NetworkWireless Sensor Networks Signal Processing and CommunicationsAd Hoc Wireless Networks: Architectures and ProtocolsWireless sensor networksWireless sensor networksFundamentals of Sensor Network Programming:		Nam Pub Wile Johr Pear	lisher ey n Wile rson E nger	y & Sons.
Assignmen List of Boo Text Book Name of A [1] Kazem Daniel Min TaiebZnat [2] Ananth Swami, Qin YaoWin Ho Tong Pub [3] Murthy [4] Edited Raghaveno [5]Sridhar S.Iyengar,	hts: hts: hts uthor Sohraby, holi, i. ram ng Zhao, ong, Lang / Pub by C. S. dra Pub rameshw / Phoha,	Title of the BookWireless Sensor NetworkWireless Sensor Networks Signal Processing and CommunicationsAd Hoc Wireless Networks: Architectures and ProtocolsWireless sensor networksWireless sensor networksFundamentals of Sensor Network		Nam Pub Wile Johr Pear	lisher ey n Wile rson E nger	y & Sons.

Reference	Books:									
List of equ	ipment/app	oaratus fo	or lab	oratory ex	xperimen	ts:				
Sl. No.					-					
40.										
41.										
42.										
43.										
44.										
End Semes 3hrs.	ter Examin	ation Sch	eme.	Max	imum Ma	rks	s-70.	Т	ime all	otted-
Group	Unit	Objecti	ve Ou	estions			Subjective	Que	stions	
F		(MCQ on					,	•		
		correct a		/						1
		No of		otal	No of		To answer		ks per	Total
		question to be set		larks	question to be set			ques	stion	Marks
A	ALL	10 be set		.0	to be set					
А	ALL	10	1	.0						
В	ALL				5		3	5		70
	ALL				5		5			10
С	ALL				5		3	15		
	/ multiple cho	ice type qu	lestior	n (MCQ) wit	h one corre	ect a	-	_	t in the o	bjective
part	-	51 1								,
• Spec	cific instructio	on to the st	udents	s to maintai	n the order	in a	answering ob	ojectiv	e questi	ons should
	iven on top of									
	on Scheme f									
Group		Chapter		Marks of		-	uestion to k)e		ion to be
				question	1	se			answe	ered
Α		ALL		1		10	0		10	
B		ALL		5		5			3	
C		ALL		15		5			3	
	on Scheme f					on:				
	nternal Sess		ntinu	ous Evalua	ation					40
Five No of	amination:									40
	ta									
Experiment	13									
Fyternal Fy	amination: E	vaminer-								60
	Note Book(for						10			00
experiments							10			
	eriment(one f	or each					40			
group consis	ting 5 studen	<i>c</i>								
	V	'iva voce					10			

Name of the Course: M.Tech. in Internet of Things						
Subject: Sensor Networks and Inte	rnet of Things					
Course Code: PGIT(IoT)203A,	Semester: 2 nd					

PGIT(IoT)293A Duration: 48 Hrs.		Maximum Marks: 200					
Teaching Scheme		Examination Scheme					
Fheory: 3 End Semester Exam: 70							
Futorial :		Attendance : 5					
Practical:		Continuous Assessment: 25					
Credit: 3 +		Practical Sessional internal continuous ev					
				uon: 40			
A	PI	ractical Sessional external examinati	on: 60				
Aim:							
<u>Sl. No.</u> 1.	Identify requirements from emerging WSN applications on WSN platforms, commu						
1.	systems, protocols and mi		11115, COIIIII	Iumcatioi			
ว	· ·	evaluate communication and network protoco	la used in l	WCNa			
2.	-	hanisms and algorithms for time synchronization					
3.	in WSNs						
4.	systems to be used in WSI	equirements for the design of security mechanis Ns	sms and m	iddlewar			
Objective	1 • 						
Sl. No.							
1.	-	view of various topics related to wireless sensor sis for the emerging internet-of-things.	r networks	, which			
2.	The course covers topics	with relation to various sub disciplines of comp	uter sciend	ce such as			
	hardware, operating syste	ems, distributed systems, networking, security a	and databa	ises.			
3.		ess sensor network (WSN) specific issues such a plogy control are addressed as well.	as localizat	ion, time			
Pre-Requ	isite:						
Sl. No.							
1.	Wireless Networks						
2.							
			1 -				
			Hrs./w				
Chapter	Name of the Topic		Hours	Marks			
Contents Chapter 01	Introduction and App cities, smart living, sm learning. Examples of Self-Adaptive Systems Systems, Software Arc	lications: Smart transportation, smart nart energy, smart health, and smart research areas include for instance: s, Cyber Physical Systems, Systems of chitectures and Connectors, Software Data and Big Data Mining, Privacy and					
Chapter	Introduction and App cities, smart living, sm learning. Examples of Self-Adaptive Systems Systems, Software Arc Interoperability, Big I Security IoT Reference Archite Information View, Dep Relevant architectura Real-World Design Co Design constraints- ha	hart energy, smart health, and smart research areas include for instance: s, Cyber Physical Systems, Systems of chitectures and Connectors, Software Data and Big Data Mining, Privacy and ecture- Introduction, Functional View, ployment and Operational View, Other	Hours	Marks			

	two- com	mercial building									
	automatio	on in the future.									
04	Hardware	Platforms and Energy (Consumption, Operating	10	16						
		Fime Synchronization , P									
	Localizati	Localization, Medium Access Control, Topology and									
	Coverage	Coverage Control, Routing: Transport Protocols, Network									
		Middleware, Databases	, ,								
05		IOT Physical Devices & Endpoints: What is an IOT Device, 7 15									
	Exemplar		·····,		_						
	-	ice Board, Linux on Raspberry, Interface and									
		ogramming & IOT Device									
06	U	ends in sensor network	and IOT architecture.	5	5						
00	Automati				5						
		aspect of IOT									
	Sub Total	-		40	70						
		ssessment Examination & I	Pronaration of Somostor	TU	30						
	Examinatio		reparation of Semester		30						
	Total:	<u> </u>			100						
Dractical	Based on T	hoom			100						
Flattical:	Daseu oli 1	neory									
Skille to be	davalana	1.									
SKIIIS LU DU	e developed	1.									
List of Dro	atical CL N	a 10 2 commulcom 0 at	logat three from the rea	•)							
LIST OF PLA	cucal: 51. No	b. 1& 2 compulsory & at	least three from the res	IJ							
a	- 4 -										
Assignmen	nts:										
	-										
List of Boo											
Text Book				l							
Name of A	uthor	Title of the Book	Edition/ISSN/ISBN	Name of							
				Publish	er						
Reference	Books:										
Mandler, H	3., Barja,	Internet of Things.		Springe	r						
J., Mitre Ca		IoT Infrastructures,		Interna							
M.E., Cagá		,		Publish							
Chaouchi,					8-						
Zeadally, S	•										
M., Giorda											
Fazio, M., S											
Vieriu, R											
viciiu, it.	.,										
Listofor	inmont/a-	nanatua fan lakanata	yn onim onto:								
-	ipment/ap	paratus for laboratory e	xperiments:								
Sl. No.											
45.											
46.											
47.											
	ster Examin	ation Scheme. Max	kimum Marks-70.	Time	allotted-						
3hrs.	1										
Group	Unit	Objective Questions	Subjective	Question	16						

				1			
		(MCQ only					
		correct an No of	Total	No of	To answer	Maultan	er Total
					10 answer	Marks p	
		question	Marks	question		question	n Marks
		to be set	10	to be set			
A	ALL	10	10				
р	AT T				2		70
В	ALL			5	3	5	70
С	ALL			5	3	15	
		oice type que	estion (MCO) wit	-	ect answer are to	-	the objective
	art.	olee type que				be see m	uie objective
-		ion to the stu	dents to mainta	in the order	· in answering ob	viective ou	estions should
	e given on top o			in the order	in answering of	ijeenve qu	estions should
	- ·		nester exami	nation:			
Group		Chapter	Marks o		Question to b	be Ou	estion to be
•			questio	n	set	-	swered
Α		ALL	1		10	10)
В		ALL	5		5	3	
C		ALL	15		5	3	
-	tion Scheme		al Sessional e	xaminatio)n:		
			tinuous Evalu				
	Examination						40
Five No o	of						
Experime	ents						
External	Examination:	Examiner-		1		1	60
Signed La	b Note Book(fo	r five			10		
experimen							
	xperiment(one				40		
group con	sisting 5 stude	nts)					
		Viva voce			10	1	

Name of the Course: M.Tech. in In	ternet of Things				
Subject: Data visualization					
Course Code: PGIT(IoT)203B,	Semester: 2 nd				
PGIT(IoT)293B					
Duration: 48 Hrs.	Maximum Marks: 200				
Teaching Scheme	Examination Scheme				
Theory: 3	End Semester Exam: 70				
Tutorial: 0	Attendance : 5				
Practical: 4	Continuous Assessment: 25				
Credit: 3 + 2	Practical Sessional internal continuous evaluation:				
	40				
	Practical Sessional external examination: 60				
Aim:					
Sl. No.					
	gn process to develop visualization methods and , and methods for their evaluation.				
2. Preparation and proc	essing of data, visual mapping and the visualization				
3. Have an understandin	ng of large-scale abstract data				
Objective:					

Sl. No.									
1.	Familiarize students with the basic and advanced techniques of information visualization and scientific visualization,								
2.			,						
3.	To learn key techniques of the visualization process A detailed view of visual perception, the visualized data and the actual								
5.	visualization, interaction and distorting techniques								
	Visuulizat	ion, meet decton and dist	torting teeninques						
Pre-Requi	site:								
Sl. No.									
1.									
2.									
Contents	•				Hrs./w	eek			
Chapter	Name of t	he Topic			Hours	Marks			
01	Introducti	ion of visual perception	, visual representation o	of	8	10			
	data, Gest	alt principles, informati	ion overloads.						
02	Creating v	isual representations, v	visualization reference		8	12			
		ual mapping, visual ana	alytics, Design of						
		ion applications.							
03		tion of visualization sys			10	12			
		-	ing, Visualization of one,	-					
			text and text documents						
04			phs, clusters, networks,	,	11	16			
		Metaphorical visualizat			7	1 5			
05			vector fields, processes			15			
		ns, visualization of map ns, collaborative visuali	s, geographic informatio	on,					
	visualizat	•	Zauons, Evaluating						
06		ends in various percepti	ion techniques various		4	5			
00		ion techniques,	ion teeninques, various		T	5			
		tures used in data visua	alization.						
	Sub Total:				48	70			
	Internal As	sessment Examination &	Preparation of Semester			30			
	Examinatio	on							
	Total:					100			
Practical:	Based on T	heory							
Skills to be	e developed	:							
		40.0 1 0 1							
List of Pra	ctical: SI. No	b. 1& 2 compulsory & at	least three from the res	tj					
Assignme	atc.								
Assignmen	115:								
List of Boo	ks								
Text Book									
Name of A		Title of the Book	Edition/ISSN/ISBN	Nai	me of the	2			
		DOM			blisher				
					2				
				1					
Reference	Books:								
1. WA	RD,	Interactive Data		Nat	tick : A K	Peters,			

GRINSTEIN		Visualiza Foundati Techniqu Applicati	ons, ies, and ions.			Ltd.		
2. E. T	`ufte,	The Visu Quantita Informat				Gra	phics F	Press.
List of equ	ipment/ap	paratus fo	r laboratory e	xperimen	ts:			
Sl. No.								
48.								
49.								
50.								
51.								
52.				-				_
End Semes 3hrs.	ster Examin	ation Scho	eme. Max	timum Ma	rks-70.	T	ime all	otted-
Group	Unit	Objectiv	ve Questions		Subjective	Que	stions	
-		(MCQ onl	y with the		-	-		
		correct an						,
		No of	Total	No of	To answer		ks per	Total
		question	Marks	question to be set		ques	stion	Marks
A	ALL	to be set	10	to be set				
А		10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
part ● Spe be g	t. cific instructi given on top o	on to the stu f the questi	idents to mainta on paper.	in the order	ect answer are to • in answering ob			
	on Scheme		mester exami					
Group		Chapter	Marks o question		Question to b set)e	answ	tion to be ered
A		ALL	1		10		10	
B		ALL	5		5		3	
C	an Caltaria	ALL	15		5		3	
			cal Sessional e)11:			
	nternal Ses		itinuous Evalu	ation				40
Five No of	sammation	i 						40
Experimen	ts							
Experimen	ເວ							
External Ex	amination: H	 Examiner-		1				60
	Note Book(for				10			
experiments	5)							
On Spot Exp	eriment(one				40			
group consis	sting 5 studer							
	I.	Viva voce			10			

	the Course: M.Tech. in Internet			
	oT Applications and Communic ode: PGIT(IoT)203C, Sem	ester: 2 nd		
PGIT(IoT)		lester: 2		
Duration		ximum Marks: 200		
Teaching		mination Scheme		
Theory: 3		Semester Exam: 70		
Tutorial:		endance : 5		
Practical		tinuous Assessment: 25		
Credit: 3		ctical Sessional internal continu	ious eva	luation:
	40			
	Pra	ctical Sessional external examin	ation: 6	0
Aim:				
Sl. No.				
1.		nological options, platforms and ca	se studie	es of IoT
	implementation in home & ci			
2.	Determine the Market perspe	ective of IoT.		
3.				
Ohication				
Objective Sl. No.				
1.	Basic introduction of all the 	lements of IoT-Mechanical, Electro	nics/so	isor
1.		ine protocols, Mobile to Electronics		
	Mobile to enterpriseintegrati		, megia	cion,
2.		ctronics platform for IoT-Raspberr	v Pi, Arc	luino,
	ArmMbedLPC	· ·		
3.	Open source /commercial en Libellium, Axeda, Cisco fog cl	terprise cloud platform for IoT-Ay oud	la, iO Bri	dge,
Pre-Requ	lisite:			
Sl. No.				
1.	Computer Networks			
2.				
Contents			Hrs./w	
Chapter	Name of the Topic		Hours	Marks
01		re of a sensor — sensor body,	9	10
		libration, sensor maintenance,		
	cost and pricing structure, leg network.	gacy and modern sensor		
		conics — IoT vs legacy, and onen		
	Development of sensor electr	onics — IoT vs legacy, and open ign style		
	Development of sensor electr source vs traditional PCB des	ign style		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave	ign style nunication protocols, Protocols: e, X10,Bluetooth, ANT, etc.		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de	ign style nunication protocols, Protocols: e, X10,Bluetooth, ANT, etc. eployment — FDA/EPA		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de regulation, fraud/tempering	ign style nunication protocols, Protocols: , X10,Bluetooth, ANT, etc. ployment — FDA/EPA detection, supervision, quality		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de regulation, fraud/tempering control and process managem	ign style nunication protocols, Protocols: e, X10,Bluetooth, ANT, etc. eployment — FDA/EPA detection, supervision, quality nent		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de regulation, fraud/tempering control and process manager Different kind of calibration	ign style nunication protocols, Protocols: x, X10,Bluetooth, ANT, etc. ployment — FDA/EPA detection, supervision, quality nent Fechniques: manual, automation,		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de regulation, fraud/tempering control and process manager Different kind of calibration 7 infield, primary and secondar	ign style nunication protocols, Protocols: x, X10,Bluetooth, ANT, etc. ployment — FDA/EPA detection, supervision, quality nent Fechniques: manual, automation,		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de regulation, fraud/tempering control and process managem Different kind of calibration T infield, primary and secondar implication in IoT	ign style nunication protocols, Protocols: e, X10,Bluetooth, ANT, etc. eployment — FDA/EPA detection, supervision, quality nent Fechniques: manual, automation, ry calibration — and their		
	Development of sensor electr source vs traditional PCB des Development of sensor comm Modbus, relay, Zigbee, Zwave Business driver for sensor de regulation, fraud/tempering control and process managem Different kind of calibration 7 infield, primary and secondar implication in IoT	ign style nunication protocols, Protocols: x, X10,Bluetooth, ANT, etc. ployment — FDA/EPA detection, supervision, quality nent Fechniques: manual, automation,		

			X . 1 . 1 . 1 . 6			
		ong distance Zigbee	. Introduction to differen	nt		
	Zigbee chips.			_		
			h power, speed of detect	ion,		
		troduction of Blue	ooth vendors & their			
	review.					
			et and packet structure for			
			ce RF communication lin	k.		
			roughput calculation			
		-	tocols:power consumpti	on,		
	reliability, PEF					
03	PCB vs FPGA vs	6		9		12
			ction electronics QA			
		IOT- CE/CSA/UL/IE				
		2	PCB design and its work			
		-	ept of FIT and early mort	ality		
			y testing-basic concepts			
	-	urce platforms: Ard	uino, Raspberry Pi,			
	Beaglebone					
04		o Mobile app platfo		1 8		16
			le to server integration,			
	iBeacon in IoS,	Window Azure, Lin	kify Mobile platform for	IoT,		
	Axeda,Xively					
05			: Cloud based IoT platfor			15
	SQL vs NoSQL,	Open sourced vs. L	icensed Database, Availa	ble		
	M2M cloud pla	tform, AxedaXively	, Omega NovoTech, Ayla			
	Libellium, CISC	CO M2M platform, A	Т			
	&T M2M platfo	orm, Google M2M pl	atform 5			
06	Recent trends	in home automatio	n, IoT-locks, Energy	5		5
	optimization in	n				
	home					
	Sub Total:			4	8	70
	Internal Assess	nent Examination & I	Preparation of Semester			30
	Examination					
	Total:					100
Practical		ory				100
	Total: l: Based on Theo	ory				100
	Total:	ory				100
	Total: l: Based on Theo	ory				100
Skills to	Total: l: Based on Theo be developed:		t least three from the re	st)		100
Skills to	Total: l: Based on Theo be developed:		t least three from the re	st)		100
Skills to List of Pı	Total: l: Based on Theo be developed: ractical: Sl. No. 1		t least three from the re	st)		100
Skills to List of Pı Assignm	Total: l: Based on Theo be developed: ractical: Sl. No. 1 eents:		t least three from the re	st)		100
Skills to List of Pı Assignm List of Bo	Total: l: Based on Theo be developed: ractical: Sl. No. 1 ients: ooks		t least three from the re	st)		100
Skills to List of Pı Assignm List of Bo Text Boo	Total: l: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks oks:	& 2 compulsory & a	t least three from the re	_		
Skills to List of Pı Assignm List of Bo Text Boo	Total: l: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks oks:		t least three from the re Edition/ISSN/ISBN	Name		
Skills to List of Pı Assignm List of Bo Text Boo	Total: l: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks oks:	& 2 compulsory & a		_		
Skills to List of Pı Assignm List of Bo Text Boo	Total: l: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks oks:	& 2 compulsory & a		Name		
Skills to List of Pı Assignm List of Bo Text Boo	Total: l: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks oks:	& 2 compulsory & a		Name		
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Skills to List of Pr Assignm List of Bo Text Boo Name of	Total: l: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks oks:	& 2 compulsory & a		Name		
Skills to List of Pr Assignm List of Bo Text Boo Name of Reference	Total: I: Based on Theo be developed: ractical: Sl. No. 1/ nents: ooks bks: Author	& 2 compulsory & a		Name	sher	}
Skills to List of Pr Assignm List of Bo Text Boo Name of Name of Reference Olivie	Total: I: Based on Theo be developed: ractical: Sl. No. 1 nents: ooks bks: Author Ti ce Books:	& 2 compulsory & a		Name Publis	sher	}

		Р	rotoc	ols					
List of equ	ipment/apj	paratus f	or lab	oratory ex	xperimen	ts:			
Sl. No.									
53.									
54.									
55.									
56.									
57.									
	ter Examin	ation Scl	ieme.	Max	imum Ma	rks-70.	Т	ime all	otted-
3hrs.							-		
Group	Unit	Obiect	ive Ou	iestions		Subjective	Oue	stions	
	0	(MCQ or				545,00010	Z		
		correct	-						
		No of]	Гotal	No of	To answer	Mar	ks per	Total
		question		Marks	question		ques	stion	Marks
		to be set			to be set				
A	ALL	10	1	10					
В	ALL				5	3	5		70
С	ALL				5	3	15		
		oice type q	uestio	n (MCQ) wit	h one corre	ect answer are to	be se	t in the o	objective
part									
					n the order	in answering ob	jectiv	e questi	ons should
	iven on top o								
	on Scheme			1		Ou astion to b		Orrest	ion to ho
Group		Chapter		Marks of		Question to b	be	-	tion to be
•		AT T		question	1	set		answe	ereu
A		ALL		1		10		10	
B		ALL		5		5		3	
C	Calcara	ALL		15		5		3	
	on Scheme					on:			
	nternal Ses		ntinu	ious Evalu	ation				40
	amination	:							40
Five No of									
Experiment	ts								
		<u> </u>							
	amination: E					40	1		60
-	lote Book(for	rive				10			
experiments	<u>)</u> eriment(one :	for oach				40			
	sting 5 studen					40			
group consis		Viva voce				10			
						10			

Name of the Course: M.Tech. in Internet of Things Subject:Big Data Analytics

Course C	ode:PGIT(IoT)204A	Semester: 2 nd		
	: 48 Hours	Maximum Marks: 100		
Teaching		Examination Scheme		
Theory: 3		End Semester Exam: 70		
Tutorial:		Attendance: 05		
Practical:		Internal Assessment: 25		
Credit: 3	NA	Practical Sessional internal continuous ev	valuation	·ΝΔ
cieuit. 5		Practical Sessional external examination:		
Aim:		Flactical Sessional external examination.	NA	
Sl. No.				
1.	Describe big data and u	se cases from selected business domain	S	
2.	Install, configure, and r	un Hadoop and HDFS		
3.	Perform map-reduce an	alytics using Hadoop		
4.	Use Hadoop related too analytics	ls such as HBase, Cassandra, Pig, and Hi	ve for big	g data
5.	Explain NoSQL big data	management		
Objective	9:			
Sl. No.				
1.		business intelligence. Learn business c and nosql big data management. Perforr and related tools		
2.	analytics using nauoop			
2. 3.				
з.				
Pre-Requ	usito.			
Sl. No.				
	Data Structure			
1. 2.	Data Structure	and Organization		
Ζ.	Computer Architecture			
Contonto			Uma /ru	aala
Contents			Hrs./w	
Chapter	Name of the Topic		Hours	Marks
01		g data, convergence of key trends,	8	10
		stry examples of big data, web		
		narketing, fraud and big data, risk and		
		nagement, big data and algorithmic		
		althcare, big data in medicine,		
	5 5	a, big data technologies, introduction		
		technologies, cloud and big data,		
		ence, Crowd sourcing analytics, inter		
0.0	and trans firewall analy		0	10
02	-	aggregate data models, aggregates,	8	12
		t data models, relationships, graph		
		latabases, materialized views,		
		arding, master-slave replication, peer-		
		ng and replication, consistency,		
		ersion stamps, map-reduce,		
	partitioning and combined	ning, composing map-		
			1	
03	reducecalculations.	data with Hadoop, scaling out, Hadoop	9	12

	system (HD Hadoop I/C	Hadoop pipes, design of OFS), HDFS concepts, Java), data integrity, compre lata structures				
04	local tests, reduce, YAI scheduling,	e workflows, unit tests w anatomy of MapReduce RN, failures in classic Ma , shuffle and sort, task ex ats, output formats	job run, classic Map- p-reduce and YARN, jo	b	10	16
05	examples, p	n model and implementa praxis.Cassandra, Cassar Cassandra clients, Hadoo	ndra data model, Cassa		7	15
06	Pig Latin sc Hive, data t	pig data model, Pig Latir rripts. ypes and file formats, H a manipulation, HiveQL	iveQL data definition,	ıg	6	5
	Sub Total:				48	70
		essment Examination & Pr	eparation of Semester			30
	Examination Total:	1				100
Text Boo Name of	oks: f Author	Title of the Book	Edition/ISSN/ISBN	Nan	ne of tl	he
				Pub	lisher	
1. N				Pub	lisher	
Chambe	•	"Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses"			ey, 201	
Chambe Ambiga 2. F	Michael Michelle ers, and Dhiraj, P. J. Sadalage	Analytics: Emerging Business Intelligence and Analytic Trends		Wil	ey, 201 lison-V	
Chambe Ambiga 2. F and M. F	Michael Michelle ers, and Dhiraj, P. J. Sadalage	Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", "NoSQL Distilled: A Brief Guide to the Emerging World ofPolyglot	Third Edition,	Wile Add Pro	ey, 201 lison-V	13. Vesley nal, 2012.
Chambe Ambigal 2. F and M. F 3. 1	Michael Michelle ers, and Dhiraj, P. J. Sadalage Fowler, Fowler, Fom White, Eric	Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", "NoSQL Distilled: A Brief Guide to the Emerging World ofPolyglot Persistence", "Hadoop: The	Third Edition,	Add Pro	ey, 201 lison-V fessior	Vesley nal, 2012. 2012.

6. Lar	rs George,	"HBase: 1 Definitive				O'R	eilley, 2	2011.
7. Ebe	en Hewitt,	"Cassand				O'R	eilley, 2	2010.
		Definitive						
8. Ala	n Gates,	"Program	iming Pig",			O'R	eilley, 2	2011.
_	ipment/ap	paratus for	r laboratory e	xperimen	ts:			
Sl. No.								
58. 59.								
<u> </u>								
61.								
62.								
End Semes 3hrs.	ster Examin	ation Sche	me. Max	ximum Ma	rks-70.	Т	ime all	otted-
Group	Unit	Objectiv	e Questions		Subjective	e Que	stions	
-		(MCQ only	v with the		·	·		
		correct an		N. C		N	1	m , 1
		No of question	Total Marks	No of question	To answer		ks per stion	Total Marks
		to be set	Marks	to be set		que	501011	Marks
А	ALL	10	10					
_								
В	ALL			5	3	5		70
С	ALL			5	3	15		
-	-	oice type que	estion (MCQ) wi	th one corre	ect answer are to	be se	t in the o	objective
part		on to the stu	donta to mointo	in the order	in anowaring al	, i o ativ		ang ghould
-	given on top o			in the order	in answering ol	Jecuv	e questi	
			nester exami	nation:				
Group		Chapter	Marks o	of each	Question to	be	Quest	ion to be
			questio	n	set		answe	ered
A		ALL	1		10		10	
B		ALL	5		5		3	
C Evaminati	on Schomo	ALL for Proctic	15 al Sessional e	vominotic	5		3	
			tinuous Evalu)11;			
	xamination							40
Five No of		-						
Experimen	ts							
	amination: E Note Book(for							60
experiments		live						
· ·	eriment(one	for each						
	sting 5 studer	its)				<u> </u>		
	I	Viva voce						

Name of the Course: M.Tech. in Internet of Things Subject:Network Security

course co	de:PGIT(IoT)204B Semester: 2 nd		
Duration :	48 Hours Maximum Marks: 100		
Teaching	Scheme Examination Scheme		
Theory: 3	End Semester Exam: 70		
Tutorial: 0	Attendance: 05		
Practical: N	IA Internal Assessment: 25		
Credit: 3	Practical Sessional internal continuous ev	valuation	NA
	Practical Sessional external examination:		
Aim:			
Sl. No.			
1.	To have an understanding of basics of security and issues rela	ted to it.	
2.	Understanding of biometric techniques available and how the		ed in
	today's world.	y ure use	, u 111
3.	Security issues in web and how to tackle them.		
<u>4.</u>	Learn mechanisms for transport and network security		
Objective:			
Sl. No.			
1.	To learn the basics of security and various types of security is	SUES	
1.	To rearrie busies of security and various types of security is.	Jucsi	
2.	To study different cryptography techniques available and vari	ious secu	ritv
	attacks.	loub seeu	liity
3.	Explore network security and how they are implemented in re	al world	
<u>4.</u>	To get an insight of various issues of Web security and biomet		
	authentication.		
Pre-Requi			
Sl. No.			
1.	Computer Networks,		
2.	Web Programming		
Contents		Hrs./w	eek
Chapter	Name of the Topic	-	Marks
		Hours	
	Data security: Review of cryptography. Examples RSA, DES,	Hours 6	10
01	Data security: Review of cryptography. Examples RSA, DES, ECC.	6	
	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity.		10 12
01	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and	6	
01	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example	6	
01	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols	6 9	12
01	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network	6	
01	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection.	6 9	12
01 02 03	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec.	6 9 9	12
01	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and	6 9	12
01 02 03	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access	6 9 9	12
01 02 03 04	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection.	6 9 9 11	12 12 16
01 02 03 04	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce	6 9 9	12
01 02 03 04	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce (ex. SET), Smart	6 9 9 11	12 12 16
01 02 03 04 05	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce (ex. SET), Smart Cards, Security in Wireless Communication.	6 9 9 11 8	12 12 16 15
01 02 03 04 05	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce (ex. SET), Smart Cards, Security in Wireless Communication. Recent trends in IOT security, IDS and Biometric.	6 9 9 11 8 5	12 12 16 15 5
01 02 03 04 05	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce (ex. SET), Smart Cards, Security in Wireless Communication. Recent trends in IOT security, IDS and Biometric. Sub Total:	6 9 9 11 8	12 12 16 15 5 70
01 02 03	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce (ex. SET), Smart Cards, Security in Wireless Communication. Recent trends in IOT security, IDS and Biometric. Sub Total: Internal Assessment Examination & Preparation of Semester	6 9 9 11 8 5	12 12 16 15 5
01 02 03 04 05	Data security: Review of cryptography. Examples RSA, DES, ECC. Authentication, non-repudiation and message integrity. Digital signatures and certificates. Protocols using cryptography (example Kerberos). Attacks on protocols Network security: Firewalls, Proxy-Servers, Network intrusion detection. Transport security: Mechanisms of TLS, SSL, IPSec. Web security – SQL injection, XSS, etc. Software security and buffer overflow. Malware types and case studies. Access Control, firewalls and host/network intrusion detection. Other topics: Biometric authentication, Secure E-Commerce (ex. SET), Smart Cards, Security in Wireless Communication. Recent trends in IOT security, IDS and Biometric. Sub Total:	6 9 9 11 8 5	12 12 16 15 5 70

List of Pra	ctical: Sl. No	o. 1& 2 comp	oulsory & at	least thre	e from the res	st)		
Assignmer	its:							
List of Boo Text Book								
Name of A		Title of the	Book	Edition/	ISSN/ISBN		ne of tl olisher	ıe
Reference	Books:	1				1		
1. W. Cheswick a Bellovin.		Firewalls a Internet Se				Add 199	lison W 94.	/esley,
	Stallings.	Cryptograp Network Se				Pre	ntice H	lall, 1999.
3. B. S	chneier.	Applied Cryptograp	ohy.			Wil	ey, 199	99.
1:			-1 4		• -			
Sl. No.	ipment/ap	paratus for l	aboratory e	xperimen	ts:			
63.								
64.								
65. 66.								
67.								
	ter Examin	nation Schem	ne. Max	kimum Ma	rks-70.	Т	'ime all	otted-
3hrs.								
Group	Unit	Objective (MCQ only v	vith the		Subjective	e Que	stions	
		correct answ				1	1	m . 1
		No of question to be set	Total Marks	No of question to be set	To answer		ks per stion	Total Marks
A	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
		oice type quest	tion (MCQ) wi	-	ect answer are to		t in the	objective
part • Spe		on to the stude	ents to mainta	in the order	· in answering o	bjectiv	ve questi	ons should
		of the question						
	on Scheme	for end seme	Marks o		Question to	ho	Quest	tion to be
Group		Chapter	questio		set	DC.	answ	
Α		ALL	1		10		10	
В		ALL	5		5		3	
С		ALL	15		5		3	
Evominati	on Schomo	for Practical	Sessional e	vaminatio	nn.			

Practical Internal Sessi	onal Co	ntinuous Evalu	uation	
Internal Examination:			_	40
Five No of				
Experiments				
External Examination: Ex	aminer-			 60
Signed Lab Note Book(for f	ïve			
experiments)				
On Spot Experiment(one fo	r each			
group consisting 5 students	s)			
Viv	va voce			

Subjectin	dvanced Machine Lear			
Course Co	de:PGIT(IoT)204C	Semester: 2 nd		
Duration :	48 Hours	Maximum Marks: 100		
Teaching	Scheme	Examination Scheme		
Theory: 3		End Semester Exam: 70		
Tutorial: 0		Attendance: 05		
Practical: I	NA	Internal Assessment: 25		
Credit: 3		Practical Sessional internal continuous	evaluation	: NA
		Practical Sessional external examination	on: NA	
Aim:				
Sl. No.				
1.	Key concepts, tools a sets	and approaches for pattern recognition	on comple	x data
2.	Kernel methods for	handling high dimensional and non-line	ar pattern	S
	State-of-the-art algo	rithms such as Support Vector Machines	s and Baye	sian
	networks			
3.	Solve real-world ma	chine learning tasks: from data to infere	ence	
4.	Theoretical concepts	s and the motivations behind different l	earning	
	frameworks			
Objective	L			
Sl. No.				
1.		ncepts in pattern recognition and machi		
		gorithms for classification, regression, c	lustering a	nd
	probabilistic modeli			
2.		v of the general issues arising in the app		
		sing data, common terms used, and com	mon error	s made if
	applied incorrectly.			
3.		olbox of techniques that can be immedi		ed to rea
	world problems, or u	used as a basis for future research into t	he topic.	
Dro Dogu				
Pre-Requi				
	Machina Loarning			
<u>1.</u>	Machine Learning,			
2.	Probability Theory			
Contents			Hrc /w	oolz
Chapter	Name of the Topic		Hrs./w Hours	Marks
-	^	vised /Unsupervised Learning Leas	8	
01	They concepts, super	vised/Unsupervised Learning, Loss	Ö	10

		ic vs Non-parametric m	ethods, Elements of			
	-	tional Learning Theory				
		Learning, Bagging, Boo				40
02	Machines	ethods for non-linear da , Kernel Ridge Regressic CA, Latent Semantic Anal	on, Structure Kernels,		8	12
03		methods for using prior	-		8	12
	Bayesian	inference, Bayesian Bel	ief Networks and Graph	ical		
		robabilistic Latent Sema				
	-	on-Maximisation (EM) a	lgorithm, Gaussian			
0.4	Processes				10	11
04		nality Reduction - CCA, Feature Selection vs Fe		al	10	16
05		thods - Sub-space appro			9	15
		k approaches - Recomm	<i>v</i> 11	ion		
		curity - Business - Scien				
06		ends in supervised and	unsupervised learning		5	5
	algorithm					
		nal reducibility, feature	selection and extractio	n	40	
	Sub Total	: ssessment Examination & I	Dronaration of Compostor		40	70
	Examinati		r reparation of semester			30
	Total:	~				100
Assignme List of Bo	ents: ooks	d: o. 1& 2 compulsory & at	least three from the res	st)		
Assignme List of Bo Text Bool	ents: ooks ks:		least three from the res	_	ne of th	le
List of Pra Assignme List of Bo Text Bool Name of A	ents: ooks ks:	o. 1& 2 compulsory & at		Nam	ne of th lisher	ie
Assignme List of Bo Text Bool	ents: ooks ks:	o. 1& 2 compulsory & at		Nam		le
Assignme List of Bo Text Bool Name of A	ents: ooks ks: Author	o. 1& 2 compulsory & at		Nam		1e
Assignme List of Bo Text Bool Name of A Reference 1. Ch	ents: boks ks: Author e Books: nristopher	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine		Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop	ents: poks ks: Author e Books: hristopher p,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning.		Nam		1e
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo	ents: poks ks: Author e Books: nristopher p, hn Shawe-	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for		Nam		Ie
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning.		Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for		Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis.	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq Sl. No.	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis.	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis.	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq Sl. No. 68. 69.	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis.	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq Sl. No. 68.	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis.	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq Sl. No. 68. 69. 70.	ents: ooks ks: Author e Books: nristopher p, hn Shawe- nd stianini,	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis.	Edition/ISSN/ISBN	Nam		
Assignme List of Bo Text Bool Name of A Name of A Reference 1. Ch M. Bishop 2. Jo Taylor an NelloCris List of eq Sl. No. 68. 69. 70. 71. 72.	ents: poks ks: Author e Books: nristopher p, hn Shawe- nd stianini, uipment/ap	o. 1& 2 compulsory & at Title of the Book Pattern Recognition and Machine Learning. Kernel Methods for Pattern Analysis. paratus for laboratory e	Edition/ISSN/ISBN	Nan Pub		

Group	Unit Objective Questions Subjective Q (MCQ only with the correct answer)					e Questions	5	
		No of	Total	No of	To answer	Marks per	Total	
		question	Marks	question		question	Marks	
		to be set		to be set				
А	ALL	10	10					
В	ALL			5	3	5	70	
С	ALL			5	3	15		
be	ecific instruc given on top	tion to the stud of the question e for end sen	n paper.		in answering of	ojective ques	tions should	
	tion Scheme		Marks o		Our action to 1	0.00	ation to he	
Group		Chapter	question		Question to l set	-	stion to be vered	
Α		ALL	1		10	10		
В		ALL	5		5	3		
С		ALL	15	5		3	3	
Examinat	tion Schem	e for Practica	l Sessional e	xaminatio	n:			
Practical	Internal Se	essional Cont	inuous Evalu	ation				
Internal	Examinatio	n:					40	
Five No of	f							
Experime	nts							
	xamination					1	60	
	Note Book(f	or five						
experimen		o for oach						
On Spot Ex	periment(on sisting 5 stude							

	the Course: M.Tech. in In	ternet of Things				
	Constitution of India					
Course (Code:PGIT(IoT)205A	Semester: 2 nd				
Duration	n: 24 Hours	Maximum Marks: 100				
Teachin	g Scheme	Examination Scheme				
Theory:0	2	End Semester Exam: 70				
Tutorial:		Attendance : 5				
Practical	l: Continuous Assessment: 25					
Credit: 0	02					
Aim:						
Sl. No.						
1.	Discuss the growth of the	he demand for civil rights in India for the bulk of Indians				
	before the arrival of Ga	ndhi in Indian politics.				
2.		Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.				
3.	*	ces surrounding the foundation of the Congress Socialist				
		eadership of Jawaharlal Nehru and the eventual failure of				
	the proposal of direct e	lections through adult suffrage in the Indian Constitution				

4.	Discuss the passage of the Hindu Code Bill of 1956.							
Objectiv	ve:							
Sl. No.								
1.	Understand the premises informing the twin themes of liberty and freedom fro							
	a civil rights perspective							
2.	To address the growth of Indian opinion regarding modern Ind	ian intel	lectuals'					
	constitutional role and entitlement to civil and economic rights	as well a	as the					
	emergence of nationhood in the early years of Indian nationalis	sm.						
3.	To address the role of socialism in India after the commenceme	ent of the)					
	BolshevikRevolution in 1917 and initial drafting of the Indian C	onstituti	ion.					
Pre-Rec	juisite:							
Sl. No.								
1.								
2.								
Content	ts	Hrs./w	eek					
Chapter		Hours	Marks					
01	History of Making of the Indian Constitution:	4	14					
	HistoryDrafting Committee, (Composition & Working)							
02	Philosophy of the Indian Constitution:	4	14					
	Preamble Salient Features							
03	Contours of Constitutional Rights & Duties:	4	14					
	Fundamental Rights							
	Right to Equality							
	Right to Freedom							
	Right against Exploitation							
	Right to Freedom of Religion							
	Cultural and Educational Rights							
	Right to Constitutional Remedies							
	Directive Principles of State Policy							
	Fundamental Duties.							
04	Organs of Governance:	4	14					
	Parliament							
	Composition							
	Qualifications and Disqualifications							
	Powers and Functions							
	Executive							
	• President							
	• Governor							
	Council of Ministers							
	Judiciary, Appointment and Transfer of Judges,							
	Qualifications							
	Powers and Functions							
05	Local Administration:	4	4					
	District's Administration head: Role and Importance,							
	Municipalities: Introduction, Mayor and role of Elected							
	Representative CEO of Municipal Corporation.							
	Pachayati raj: Introduction, PRI: ZilaPachayat.							
	• Elected officials and their roles, CEO ZilaPachayat: Position							
	and role.							
	Block level: Organizational Hierarchy (Different							
	departments),							
	• Village level: Role of Elected and Appointed officials,	1	1					

	• Imp	ortance of gra	ass root den	nocracy			
06	Election Co Election Co Chie Stat Inst women.	4 ers.	10				
07							
	Sub Total:					24	70
		essment Exar	nination & P	reparation of	Semester	4	30
	Examination						
Practica	Total:					28	100
List of B Text Bo Name of		Title of the	Book	Edition/IS	SSN/ISBN	Name of t Publisher	
Referen	ce Books:						
1. T Constitu	Гhe					Governme Publicatio	
2. I	Dr. S. N. Busi, Ambedkar	framing of Constitutio	ming of Indian 1st Edition, 2015.				
	M. P. Jain, D.D. Basu,	Indian Constitution7th EdLaw,Introduction to the		7th Edn.,	·		is, 2014.
н. І	יעיט. Dasu,	Constitutio				Lexis Nex	13, 2013.
List of e	quipment/ap			experiments	5:	1	
Sl. No.				-			
73.							
74.							
75.							
<u>76.</u> 77.							
	nester Examii	nation Schen	ne. Ma	ximum Mar	ks-70.	Time al	lotted-
Group	Unit	(MCQ only v correct answ			Subjective Que		
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
А	ALL	10	10				
В	ALL			5	3	5	70

С	ALL			5	3	1	5
	nly multiple ch art.	noice type ques	stion (M	CQ) with o	ne correct an	swer are to be	set in the objective
•		tion to the stud	lents to i	maintain th	e order in an	swering objec	tive questions should
		of the question		inanitani ti			are quebtions should
	<u> </u>	e for end sem		examinat	on:		
Group		Chapter	Ma	arks of ea	ch Que	estion to be	Question to be
-		-	qu	lestion	set		answered
Α		ALL	1		10		10
В		ALL	5		5		3
С		ALL	15		5		3
Examina	ation Schem	e for Practic	cal Sess	sional exa	mination:		
Practica	l Internal S	essional Con	tinuou	is Evalua	tion		
Internal	Examinatio	on:					
Continuo	ous evaluatio	n					4
Externa	l Examinati	on: Examine	er-	·			
Signed I	.ab Assignme	ents		10			
On Spot	Experiment			40			
Viva voce			10				
Viva voc	ce			10			6
Viva voc	ce			10			6
		M.Tech. in Ir		-	S		6
Name of				-	S		6
Name of Subject:I	the Course:	udies	nternet	-			
Name of Subject:I Course C	the Course: Pedagogy Stu	udies	nternet	t of Thing ester: 2 nd			
Name of Subject:H Course C Duration	the Course: Pedagogy Stu Code:PGIT(Io	udies	nternet Sem Max	t of Thing ester: 2 nd kimum M			
Name of Subject:H Course C Duration	the Course: Pedagogy Stu Code:PGIT(Io 1: 24 Hours g Scheme	udies	nternet Sem Max Exai	t of Thing ester: 2 nd kimum M minatior	arks: 100	0	
Name of Subject:I Course C Duration Teaching	the Course: Pedagogy Stu Code:PGIT(Io n: 24 Hours g Scheme 2	udies	nternet Sem Max Exai End	t of Thing ester: 2 nd kimum M minatior	arks: 100 Scheme er Exam: 70	0	
Name of Subject:I Course C Duration Teaching Theory:0	the Course: Pedagogy Stu Code:PGIT(Io n: 24 Hours g Scheme 2 0	udies	Sem Sem Max Exan End Atte	t of Thing ester: 2 nd kimum M minatior Semeste endance	arks: 100 Scheme er Exam: 70		
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:(the Course: Pedagogy Stu code:PGIT(Io n: 24 Hours g Scheme 2 0 :0	udies	Sem Sem Max Exan End Atte	t of Thing ester: 2 nd kimum M minatior Semeste endance	arks: 100 Scheme er Exam: 7 5		6
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:(Practical:	the Course: Pedagogy Stu code:PGIT(Io n: 24 Hours g Scheme 2 0 :0	udies	Sem Sem Max Exan End Atte	t of Thing ester: 2 nd kimum M minatior Semeste endance	arks: 100 Scheme er Exam: 7 5		6
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:(Practical:	the Course: Pedagogy Stu code:PGIT(Io n: 24 Hours g Scheme 2 0 :0	udies	Sem Sem Max Exan End Atte	t of Thing ester: 2 nd kimum M minatior Semeste endance	arks: 100 Scheme er Exam: 7 5		6
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:0 Practical: Credit:02	the Course: Pedagogy Stu code:PGIT(Io n: 24 Hours g Scheme 2 0 :0	udies	Sem Sem Max Exan End Atte	t of Thing ester: 2 nd kimum M minatior Semeste endance	arks: 100 Scheme er Exam: 7 5		6
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:(Practical: Credit:02 Aim:	the Course: Pedagogy Stu Code:PGIT (Io n: 24 Hours g Scheme 2 0 :0 :0 :0 :0	udies oT)205B	Sem Max Exan End Atte Con	t of Thing ester: 2 nd kimum M minatior Semeste endance tinuous tinuous	arks: 100 Scheme er Exam: 70 5 Assessmer	nt: 25	nal and informal
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:0 Practical: Credit:02 Aim: Sl. No. 1.	the Course: Pedagogy Stu code:PGIT(Io n: 24 Hours g Scheme 2 0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :	udies oT)205B agogical prac s in developi	Sem Max Exan End Atte Con ctices an ing cou	t of Thing ester: 2 nd kimum M minatior Semeste endance tinuous tinuous re being u	arks: 100 Scheme er Exam: 7 5 Assessmer	nt: 25 chers in forr	nal and informal
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:0 Practical: Credit:02 Aim: Sl. No.	the Course: Pedagogy Stu code:PGIT (Io n: 24 Hours g Scheme 2 0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :0 :	udies oT)205B agogical prac s in developi e evidence o	Sem Max Exan End Atte Con ctices an ing cou n the e	t of Thing ester: 2 nd kimum M minatior Semeste endance tinuous tinuous re being u intries?	arks: 100 Scheme er Exam: 7 5 Assessmer ised by tea	nt: 25 chers in forr pedagogica	
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:0 Practical: Credit:02 Aim: Sl. No. 1. 2.	the Course: Pedagogy Stu code:PGIT (Io code:PGIT (Io code:	udies oT)205B agogical prac s in developi e evidence of s, and with w	Sem Max Exan End Atte Con ctices an ing cou n the en that pop	t of Thing ester: 2 nd kimum M minatior Semeste endance tinuous tinuous fiectivence flectivence	arks: 100 Scheme er Exam: 70 5 Assessmer ised by tea ess of these of learners?	nt: 25 chers in forr pedagogica ?	nal and informal l practices, in what
Name of Subject:I Course C Duration Teaching Theory:0 Tutorial:0 Practical: Credit:02 Aim: Sl. No. 1.	the Course: Pedagogy Stu code:PGIT (Io n: 24 Hours g Scheme 2 0 0 0 0 2 what peda classroom What is the conditions How can te	udies oT)205B agogical prac s in developi e evidence o	Sem Max Exan End Atte Con ctices an ing cou n the en that pop ation (c	t of Thing ester: 2 nd kimum M minatior Semeste endance tinuous tinuous fiectiveno pulation o curricului	arks: 100 Scheme er Exam: 7 5 Assessmer ised by tea ess of these of learners? n and prace	nt: 25 chers in forr pedagogica ? ticum) and t	nal and informal l practices, in what he school

Objective:

 Sl. No.

 1.
 Review existing evidence on the review topic to inform programme design and policy making undertaken by the DfID, other agencies and researchers.

 2.
 Identify critical evidence gaps to guide the development.

 3.

 Pre-Requisite:

Pre-Requ	151te:	
Sl. No.		
1.		
2.		
Contents		Hrs./week

Chapter	Name of the Topic	Hours	Marks
01	Introduction and Methodology:	4	14
	Aims and rationale, Policy background, Conceptual		
	framework and terminology		
	Theories of learning, Curriculum, Teacher education.		
	Conceptual framework, Research questions.		
	Overview of methodology and Searching.		
02	Thematic overview: Pedagogical practices are being used by	4	14
	teachers in formal and informal classrooms in developing		
	countries.		
	Curriculum, Teacher education.		
)3	Evidence on the effectiveness of pedagogical practices	4	14
	• Methodology for the in-depth stage: quality assessment of		
	included studies.		
	• How can teacher education (curriculum and practicum)		
	and the school curriculum and guidance materials best support		
	effective pedagogy?		
	Theory of change.		
	• Strength and nature of the body of evidence for effective		
	pedagogical practices.		
	 Pedagogic theory and pedagogical approaches. 		
	• Teachers' attitudes and beliefs and Pedagogic strategies.		
04	Professional development: alignment with classroom	4	14
	practices and follow-up support		
	Peer support		
	 Support from the head teacher and the community. 		
	 Curriculum and assessment 		
	Barriers to learning: limited resources and large class sizes		
05	Research gaps and future directions	4	4
05	Research design	T	T
	Contexts		
06	Pedagogy	4	10
00		4	10
	Teacher education		
	Curriculum and assessment		
	Dissemination and research impact.		
	Sub Total:	24	70
	Internal Assessment Examination & Preparation of Semester	4	30
	Examination	-	
	Total:	28	100
Practical	:		
	ante		
Accian			
Assignmo Based on			
Based on			
	ooks		
Based on List of Bo	ooks ks:	me of the	<u>e</u>

Reference Bo	oks:						
1. Ackers Hardman F			n in Kenyan			Compare, 245-261.	31 (2):
2. Agraw	al M	primary schools, (2004) Curricular reform in schools: The importance of evaluation,				Journal of Curriculu 36 (3): 36	m Studies,
3. Akyea K	mpong	(2003) Tea training in does it cou site teache education project (M country re	acher Ghana - nt? Multi- r research USTER)			London: D	FID.
4. Akyeampong K, Lussier K, Pryor J, Westbrook J		(2013) Im	proving nd learning aths and Africa: aer				onal lucational lent, 33 (3)
5. Alexander RJ (20 ped Inte com		(2001) Culture and pedagogy: International comparisons in primary education.				Oxford an Blackwell	
6. Chava	n M	(2003) Read India: A mass scale, rapid, 'learning to read' campaign.					
7.		www.prath ages/resou	nam.org/im 1rce%20w 0paper%20				
End Semester 3hrs.	· Examin	ation Schen	ne. Max	kimum Mar	ks-70.	Time all	otted-
	nit	Objective (MCQ only correct ans			Subjective	e Questions	
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A A	LL	10	10				
B Al	LL			5	3	5	70

be given or	n top of the question	paper.		
Examination Sch	eme for end seme	ester examinatio	n:	
Group	Chapter	Marks of eac question	h Question to be set	Question to be answered
Α	ALL	1	10	10
В	ALL	5	5	3
С	ALL	15	5	3
Examination Sc	heme for Practica	al Sessional exan	nination:	
Practical Intern	al Sessional Cont	inuous Evaluati	on	
Internal Examin	nation:			
Continuous evalu	uation			40
External Exami	nation: Examine	ſ-		
Signed Lab Assig	gnments	10		
On Spot Experim	nent	40		
Viva voce		10		60

	the Course: M.Tech. in In Stress management by Yo			
	ode:PGIT(IoT)205C	Semester: 2 nd		
	: 24 Hours	Maximum Marks: 100		
Teaching		Examination Scheme		
Theory:02	-	End Semester Exam: 70		
Tutorial:		Attendance : 5		
Practical:		Continuous Assessment: 25		
Credit: 02				
Aim:		1		
Sl. No.				
1.	Develop healthy mind i	in a healthy body thus improving socia	l health	
2.	Improve efficiency			
3.				
Objective	2:			
Sl. No.				
1.	To achieve overall heal	th of body and mind		
2.	To overcome stress			
3.				
Pre-Requ	iisite:			
Sl. No.				
1.				
2.				
Contents			Hrs./w	eek
Chapter	Name of the Topic		Hours	Marks
01	Definitions of Eight par	rts of yog. (Ashtanga)	8	20
02	Yam and Niyam. Do's a		8	30
		heya, bramhacharya and aparigraha		
		ı, tapa, swadhyay, ishwarpranidhan		
03	Asan and Pranayam		8	20
	i) Various yog pose	s and their benefits for mind & body		

	, ,		breathing te	chniques a	nd its effects-			
	Types of pranayam							70
	Sub Total: Internal Assessment Examination & Preparation of Semester							70 30
	Examination			eparation	of Semester		4	30
	Total:						28	100
	nts: Based o	on theory						
List of Boo								
Text Book		Title of the	Rook	Edition	'ISSN/ISBN	Nar	ne of th	
Name of P	uuioi		DUUK	Euruon	135N/13DN		lisher	IE
D								
Reference		'Yogic Asan	aa far			1		
1.Janarda Vogabhya	n Swann siMandal,	Group Tari						
Nagpur	Silvianual,	I"	ining-1 al t-					
. 91								
2.Swami		"Rajayoga o				-	blicatio	
Vivekana	•	conquering				-	partme	nt),
AdvaitaAs	shrama	Internal Na	ture"			Kol	kata	
Listofog	uinmont/201	paratus for l	ahoratory o	vnorimon	te			
Sl. No.	aipinent/ap		aboratory e	xper men				
78.								
79.								
80.								
81.								
82.					1 =0			
End Seme 3hrs.	ster Examin	ation Schem	ie. Max	timum Ma	rks-70.	Т	ime all	otted-
Group	Unit	Objective (MCQ only w correct answ	vith the		Subjective	Que	stions	
		No of	Total Marks	No of	To answer		ks per	Total Marks
		question to be set	Marks	question to be set		que	stion	IVIAI KS
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
• On pai		oice type quest	ion (MCQ) wit	th one corre	ect answer are to	be se	et in the o	objective
• Spe	ecific instructi			in the order	in answering of	ojectiv	e questi	ons should
		f the question for end seme		nation				
Group		Chapter	Marks o		Question to l	be	Quest	ion to be

		quest	tion	set	answered				
Α	ALL	1		10	10				
В	ALL	5		5	3				
С	ALL	15		5	3				
Examination Scheme	Examination Scheme for Practical Sessional examination:								
Practical Internal Se	Practical Internal Sessional Continuous Evaluation								
Internal Examination	1:								
Continuous evaluation					40				
External Examinatio	n: Examiner-								
Signed Lab Assignment	nts	10							
On Spot Experiment		40							
Viva voce		10			60				

Course C	ode:PGIT(IoT)205D	t through life enlightenment skills Semester: 2 nd		
	: 24 Hours	Maximum Marks: 100		
Teaching	Scheme	Examination Scheme		
Theory:02	2	End Semester Exam: 70		
Tutorial:0)	Attendance : 5		
Practical:	0	Continuous Assessment: 25		
Credit:02				
Aim:	1			
Sl. No.				
1.		gwad-Geeta will help the student in	developing his	5
2.		ve the highest goal in life tudied Geeta will lead the nation an	d manlrind to r	
Ζ.	prosperity	ludied Geela will lead the nation an	a mankina to p	beace and
3.		m will help in developing versatile	nersonality of s	students.
0.	study of freedomutanta		personally of	Judentsi
Objective	2:			
Sl. No.				
1.	To learn to achieve the			
2.		vith stable mind, pleasing personali	ty and determi	nation
3.	To awaken wisdom in	students		
D D	•••			
Pre-Requ Sl. No.				
<u>1.</u>				
2.				
Contents	1		Hrs./w	eek
Chapter	Name of the Topic		Hours	Marks
01		c development of personality	8	20
	• Verses- 19,20,22	1,22 (wisdom)		
	• Verses- 29,31,32	2 (pride & heroism)		
	• Verses- 26,28,63	3,65 (virtue)		
			1	1

Examination Total: nts: oks cs: author Books: andaAdva n ath, ath,	Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for 1 nation Schem	e Book bagavad ri's Three Niti- iragya) laboratory ene. Max Questions with the	Edition/IS	SSN/ISBN	24 4 28 Name of th Publisher Publication Pepartme Kolkata Rashtriya Sansthana Delhi. Time all e Questions Marks per question	on nt), Sanskrit um, New
Examination Total: nts: oks ss: withor e Books: handaAdva n ath, ipment/ap ster Examin Unit	Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for I nation Schem Objective (MCQ only v correct ansv No of question to be set	e Book hagavad nagavad i's Three Niti- iragya) laboratory e ne. Max Questions with the wer) Total Marks	Edition/IS	SSN/ISBN	4 28 Name of th Publisher (Publication Publication Rashtriya Sansthana Delhi. Time all Questions Marks per	30 100 ne on nt), Sanskrit m, New otted-
Examination Total: nts: oks ss: author e Books: andaAdva n ath, ath,	Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for I nation Schem Objective (MCQ only v correct ansy No of	e Book hagavad ni's Three Niti- iragya) laboratory ene. Max Questions with the wer) Total	Edition/IS	SSN/ISBN	4 28 Name of th Publisher (Publication Publication Rashtriya Sansthana Delhi. Time all Questions Marks per	30 100 ne on nt), Sanskrit m, New otted-
Examination Total: nts: oks ss: author e Books: andaAdva n ath, ath,	Title of the Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for l nation Schem Objective (MCQ only v	e Book bagavad ri's Three Niti- iragya) laboratory ene. Max Questions with the	Edition/Is	SSN/ISBN	4 28 Name of th Publisher (Publicati Departme Kolkata Rashtriya Sansthana Delhi.	30 100 ne on nt), Sanskrit um, New
Examination Total: nts: oks ss: author e Books: andaAdva n ath, ath,	Title of the Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for I nation Schem Objective	e Book hagavad 'i's Three Niti- iragya) laboratory e ne. Max Questions	Edition/Is	SSN/ISBN	4 28 Name of th Publisher (Publicati Departme Kolkata Rashtriya Sansthana Delhi.	30 100 ne on nt), Sanskrit um, New
Examination Total: nts: oks cs: author Books: andaAdva n ath, ath,	n Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for I	e Book hagavad 'i's Three Niti- iragya) laboratory e	Edition/Is	SSN/ISBN	4 28 Name of th Publisher (Publicati Departme Kolkata Rashtriya Sansthana Delhi.	30 100 ne on nt), Sanskrit um, New
Examination Total: nts: oks cs: author Books: andaAdva n ath, ath,	n Title of the "Srimad Bh Gita" Bhartrihar Satakam (N sringar-vai paratus for I	e Book hagavad 'i's Three Niti- iragya) laboratory e	Edition/Is	SSN/ISBN	4 28 Name of th Publisher (Publicati Departme Kolkata Rashtriya Sansthana Delhi.	30 100 ne on nt), Sanskrit um, New
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Examination Total: nts: oks cs: author e Books:	n Title of the Srimad Bh	e Book			4 28 Name of th Publisher	30 100 ne
Examination Total: nts: oks cs: outhor	n Title of the	e Book			4 28 Name of th Publisher	30 100
Examination Total: nts: oks ss:	n				4 28 Name of th	30 100
Examination Total: nts: oks ss:	n				4 28 Name of th	30 100
Examination Total: nts: oks ss:	n				4 28 Name of th	30 100
Examination Total: nts: oks ss:	n				4 28 Name of th	30 100
Examination Total: nts: oks ss:	n				4 28	30 100
Examination Total: nts:		nination & Pi	reparation of	Semester	4	30
Examination Total:		nination & Pi	reparation of	Semester	4	30
Examination		nination & Pi	reparation of	Semester	4	30
Examination		nination & Pi	reparation of	Semester	4	30
Internal Ass	Cosment Exdl	nination & Pi	reparation of	Semester		
Sab i Utali	accmant Ever	0 D			24	70
Sub Total:					1	
• Chaj	pter18 – Vers	ses 37,38,63				
• Chaj	pter 4-Verses	18, 38,39				
	-					
-	-			adGeeta		
	0	-		56, 62, 68		
						30
-	-		-	-verses 5,13,	1/,	
	0	-				
Approach to day to day work and duties.						
• 2	Approach to day to day work and duties. ShrimadBhagwadGeeta : Chapter 2-Verses 41, 47,48, Chapter 3-Verses 13, 21, 27, 35, Chapter 6-Verses 5,13,17, 23, 35,Chapter 18-Verses 45, 46, 48.					
_	 App Shri Chaj 23, 3 State Shri Chaj Pers Chaj Chaj Chaj 	 Approach to day ShrimadBhagwad Chapter 3-Verses 23, 35,Chapter 18 Statements of bas ShrimadBhagwad Chapter 12 -Vers Personality of Ro Chapter 2-Verses Chapter 4-Verses 	 Approach to day to day work ShrimadBhagwadGeeta : Chap Chapter 3-Verses 13, 21, 27, 3 23, 35, Chapter 18-Verses 45, 4 Statements of basic knowledg ShrimadBhagwadGeeta: Chap Chapter 12 -Verses 13, 14, 15, Personality of Role model. Shr 	 ShrimadBhagwadGeeta : Chapter 2-Verses Chapter 3-Verses 13, 21, 27, 35, Chapter 6 23, 35, Chapter 18-Verses 45, 46, 48. Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses Chapter 12 -Verses 13, 14, 15, 16,17, 18 Personality of Role model. ShrimadBhagw Chapter2-Verses 17, Chapter 3-Verses 36, Chapter 4-Verses 18, 38,39 	 Approach to day to day work and duties. ShrimadBhagwadGeeta : Chapter 2-Verses 41, 47,48, Chapter 3-Verses 13, 21, 27, 35, Chapter 6-Verses 5,13, 23, 35, Chapter 18-Verses 45, 46, 48. Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68 Chapter 12 -Verses 13, 14, 15, 16,17, 18 Personality of Role model. ShrimadBhagwadGeeta: Chapter2-Verses 36,37,42, Chapter 4-Verses 18, 38,39 	 Approach to day to day work and duties. ShrimadBhagwadGeeta : Chapter 2-Verses 41, 47,48, Chapter 3-Verses 13, 21, 27, 35, Chapter 6-Verses 5,13,17, 23, 35, Chapter 18-Verses 45, 46, 48. Statements of basic knowledge. ShrimadBhagwadGeeta: Chapter2-Verses 56, 62, 68 Chapter 12 -Verses 13, 14, 15, 16,17, 18 Personality of Role model. ShrimadBhagwadGeeta: Chapter2-Verses 36,37,42, Chapter 4-Verses 18, 38,39

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme	e for end seme	ester examination	1:	
Group	Chapter	Marks of each question	Question to be set	Question to be answered
Α	ALL	1	10	10
В	ALL	5	5	3
С	ALL	15	5	3
Examination Schem	e for Practica	l Sessional exam	ination:	
Practical Internal S	essional Cont	inuous Evaluatio	n	
Internal Examination	on:			
Continuous evaluatio	n			40
External Examinati	on: Examiner	·-		
Signed Lab Assignme	ents	10		
On Spot Experiment		40		
Viva voce		10		60

iternet of Things
Semester: 4 th
Maximum Marks:100
Examination Scheme100
End Semester Exam:
Teacher's Assessment:0
Internal Assessment:0
Practical Sessional internal continuous evaluation:40
Practical Sessional external examination:60

Contents

Students will do projects on application areas of latest technologies and current topics of societal relevance.

Semester III

	the Course: M.Tech. in Internet of Things	1		
	Cloud Computing			
	ode: PGIT(IoT)301A Semester: 3 rd			
	: 48 Hours Maximum Ma			
Teaching				
Theory: 3				
Tutorial:				
Practical:				
Credit: 3		onal internal continuous ev		NA
	Practical Session	onal external examination:	NA	
Aim:	1			
Sl. No.				
1.	Identify security aspects of each cloud			
2.	Develop a risk-management strategy for			
3.	Implement a public cloud instance usin		orovider	
4.	Apply trust-based security model to dif	ferent layer		
Objective				
Sl. No.				
1.	The student will also learn how to appl	y trust-based security mo	odel to r	eal-
2.	world security problems.	and heat mus stices a so d		
Ζ.	An overview of the concepts, processes secure information within Cloud infras		ea to suc	cessiuny
3.			d dovol	on an
э.	Students will learn the basic Cloud type	-		-
	understanding of the risk and complian	ice responsibilities and C	nanenge	estor
	each Cloud type and service delivery model.			
	denvery model.			
Pre-Requ	uisita:			
Sl. No.				
1.	Networking			
2.	Distributed Computing			
2.				
Contents			II.e. /	
Chapter	Name of the Topic		Hrs./we	ek
unapter			Hrs./we	
	• • • • • • • • • • • • • • • • • • •		Hours	Marks
01	Introduction to Cloud Computing	ns. Cloud introduction		
	Introduction to Cloud Computing Online Social Networks and Application		Hours	Marks
	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N		Hours	Marks
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing		Hours 4	Marks 10
	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture	Novel applications of	Hours	Marks
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com	Novel applications of puting architecture,	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a	Novel applications of puting architecture, at the infrastructure	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi	Novel applications of puting architecture, at the infrastructure ronments, CPU	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S Cloud Services Delivery Model	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S Cloud Services Delivery Model Cloud Deployment Models	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework oftware Model, The	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S Cloud Services Delivery Model Cloud Deployment Models Key Drivers to Adopting the Cloud, The	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework oftware Model, The Impact of Cloud	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S Cloud Services Delivery Model Cloud Deployment Models Key Drivers to Adopting the Cloud, The Computing on Users, Governance in the	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework oftware Model, The Impact of Cloud e Cloud, Barriers to	Hours 4	Marks 10
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S Cloud Services Delivery Model Cloud Deployment Models Key Drivers to Adopting the Cloud, The Computing on Users, Governance in the Cloud Computing Adoption in the Enter	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework oftware Model, The Impact of Cloud e Cloud, Barriers to	Hours 4 11	Marks 10 12
01	Introduction to Cloud Computing Online Social Networks and Application and overview, Different clouds, Risks, N cloud computing Cloud Computing Architecture Requirements, Introduction Cloud com On Demand Computing Virtualization a level, Security in Cloud computing envi Virtualization, A discussion on Hypervi Virtualization Cloud Computing Define for Cloud Computing, The Traditional S Cloud Services Delivery Model Cloud Deployment Models Key Drivers to Adopting the Cloud, The Computing on Users, Governance in the	Novel applications of puting architecture, at the infrastructure ronments, CPU sors Storage d, The SPI Framework foftware Model, The Impact of Cloud e Cloud, Barriers to prise	Hours 4	Marks 10

	nce Books: John Rhoton, Tim Mather,	Cloud Computing Explained: Implementation Handbook for Enterprises, Cloud Security and	Edition/ISSN/ISBN Publication Date: November 2, 2009 ISBN-10:	Name of the Publisher	
Name of Refere	nce Books:		Publication Date:		he
Name of Refere	nce Books:				he
			Edition/ISSN/ISBN		he
			Edition/ISSN/ISBN		he
	Jinuuioi		Edition/ISSN/ISBN	Name of t	he
List of		Title of the Book			
U					
	Practical: SI. No ments:	o. 1& 2 compulsory & a	t least three from the res	t)	
	o be developed				
Practio				I	100
	Examination				100
	Sub Total: Internal Ass	essment Examination & P	Preparation of Semester	48	70 30
		elopments in hybrid clo	oud and cloud security.		
06	as-a-Cloud ADVANCED		aa ioi compnance, secui	10 ⁻	5
	Compliance	e (GRC), Regulatory/Ex	ternal Compliance, Cloud ud for Compliance, Secur		
05	Audit and (Compliance llicy Compliance, Gover	nance Risk and	11	15
	Cloud, Prot Manageme Legal and F	ecting Privacy, Changes nt and Compliance in R	s to Privacy Risk elation to Cloud Computi s, U.S. Laws and Regulatio	ng,	
	Cloud, Avai Privacy Iss	ilability Management: S ues			
04		anagement in the Cloud	Security Management in t	8 the	16
~ .	Standards a	•	allenges, Relevant IAM Services, IAM Practices i nagement	in	
	-	d Access Management			
		ata and Its Security			

		(Theory	y in Pr	actice),					
List of equ	ipment/ap	paratus f	or lab	oratory e	xperimen	ts:			
Sl. No.					-				
83.									
84.									
85.									
86.									
87.									
End Seme 3hrs.	ster Examin	ation Scl	neme.	Мах	kimum Ma	rks-70.	Т	ime all	otted-
Group	Unit	Object	ίνο Οιι	estions		Subjective		stions	
uroup	ome	(MCQ or				Subjective	Que	500115	
		correct	-						
		No of		'otal	No of	To answer	Mar	ks per	Total
		question		larks	question		ques	stion	Marks
		to be se			to be set				
A	ALL	10	1	.0					
В	ALL				5	3	5		70
_									
С	ALL				5	3	15		
		oice type q	uestior	n (MCQ) wi	th one corre	ect answer are to	be se	t in the	objective
par						,			
	given on top o				in the order	in answering ob	ojectiv	e questi	ions should
	ion Scheme				nation				
Group	ion scheme	Chapter		Marks o		Question to b	10	Ουρεί	tion to be
uroup		Chapter	questio		e		answered		
Α		ALL		1		10		10	cicu
B		ALL		5		5		3	
C		ALL	15		5		3		
_	ion Scheme		ical Se		vaminatio	-		0	
	Internal Ses					/11.			
	xamination		munu	ous Lituit					40
Five No of		·							10
Experimen	nts								
External Ex	kamination: I	- Examiner-			1		I		60
	Note Book(for								
experiment									
	periment(one								
group consi	sting 5 studer								
		Viva voce							

	the Course: M.Tech. in Intern	et of Things				
	Real Time Operating system					
		Semester: 3 rd				
		Maximum Marks: 100				
Teaching	-	amination Scheme				
Theory: 3		d Semester Exam: 70				
Tutorial:		tendance: 05				
Practical:		ternal Assessment: 25				
Credit: 3		actical Sessional internal continuous ev		: NA		
	Pra	actical Sessional external examination:	NA			
Aim:	1					
Sl. No.						
1.	• Explain fundamental p time and resource limitatio	principles for programming of real ti ns.	me syste	ms with		
2.	• Describe the foundation time programming.	on for programming languages deve	loped for	real		
3.	Account for how real ti	ime operating systems are designed	and fund	ctions.		
4.	• Describe what a real ti	<u> </u>				
5.	• Use real time system p systems for real time applic	rogramming languages and real tim	e operat	ing		
6.		ems with regard to keeping time and	Irocouro	0		
0.	restrictions.	enis with regard to keeping time and	i i esoure	C		
Objective						
Sl. No.						
1.	Real-time scheduling and so	chedule ability analysis				
2.	0	erification of timing constraints and	nronerti	ρç		
3.	Design methods for real-tin	<u> </u>	properti			
4.		ntation of new techniques to advance	e the sta	te-of-the-		
	art real-time systems resea	=	e me stu			
Pre-Requ	· · · · · · · · · · · · · · · · · · ·					
Sl. No.						
1.	Operating system					
2.						
Contents			Hrs./w	eek		
Chapter	Name of the Topic		Hours	Marks		
01	Real Time Systems:		4	5		
-		stems, Classification of Real Time				
	System, Concept of Computer					
	Operating Systems	· 51				
02	Requirements for Real Time	e Systems:	4	10		
	Human Computer Interaction in Real Time Systems, Hardware					
	Requirement for Real time Sy	stems, Specialized Processors,				
	Interfaces & Communications	-				
03	Modeling Real-Time System	ns and Real Time Languages:	4	5		
		iral Elements, Interfaces, Event-				
	-	ered, Interrupts, Overview of Real				
		me Languages, Modula 2 as Real Time				
	Language, Ada as Real Time L					

04		Operating Systems – 1:	Fask Management & Memo	arv	6	10
		it, Scheduling Strategies, (
	Operating S	0 0				
05		Operating Systems – 2:			6	10
	Inter task (
	Kernels, Pr	actical Real Time Opera	iting Systems			
06	Design of R	eal Time Systems:			6	10
	Planning an	d Development Phase, Sp	ecification for Real-Time			
	Systems, Pre	eliminary Design, Basic So				
	Principles, E	Basic Design Using an RTC				
07	Multi- Proc	essing Systems and Dev	elopment Methodologie	s:	6	5
			s, Multiple Tasks, Dispatcl			
	Yourdon Sys	stems Method (YSM), The	Ward and Mellor Essentia	al		
	Model, The l	Hatley and Pirbhai Requii	rements Model			
08	Design Ana	lysis:			6	5
	Petri Nets, P	etri Nets and the Modelir	ng of Systems, Properties o	of		
	Petri Nets, S	cheduler Characteristics,	Real Time vs. General			
	Purpose Dat	tabase, Transactions and	Serializability, Scheduling			
	RTDB Trans	actions, Disk Scheduling				
09	Fault Toler	ance Techniques and Se	ecurity in RTOS:		6	10
	Failures, Eri	cors, and Faults, Error Def	tection, Testing Technique	es, A		
	Model for N	etwork Security, Potentia	l Attacks to Real Time			
	Systems, Cry	yptography, Authenticatio	on, Design Principles.			
	Sub Total:				48	70
		essment Examination & P	reparation of Semester			30
	Examination	1				4.0.0
	Total:					100
Practical						
Skills to I	be developed	1:				
List of Pr	actical: Sl. No	o. 1& 2 compulsory & at	least three from the res	t)		
Assignme	ents:					
List of Bo	oks					
Text Boo	ks:					
Name of A	Author	Title of the Book	Edition/ISSN/ISBN	Nai	ne of tl	he
				Pul	olisher	
Referenc	e Books:					
Jane Liu,		Real-Time Systems,		Pre	entice H	Iall, 2000.
-	uipment/ap	paratus for laboratory e	experiments:			
Sl. No.						
88.						
89.						
90.						

End Semo 3hrs.	ester Examin	ation Schei	ne. Max	kimum Ma	rks-70.	Т	'ime all	otted-
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions				
		No of question to be set	Total Marks	No of question to be set	To answer		ks per stion	Total Marks
А	ALL	10	10					
В	ALL			5	3	5		70
С	ALL			5	3	15		
be Examina	e given on top o tion Scheme	of the question for end sen	n paper. Nester exami	nation:	in answering o			
Group		Chapter	Marks o		Question to be		Question to be	
•			questio	n	set		answ	ered
A B		ALL ALL	<u> 1 </u>		<u>10</u> 5		10 3	
<u>в</u> С		ALL	15		5		3	
-	tion Scheme		-	vaminatio	-		3	
	Internal Ses							
	Examination							4(
Five No o	f							
Experime	ents							
	Examination: I Note Book(for							60
experimen		inve						
	xperiment(one	for each						
	sisting 5 studer							
		Viva voce						

Name of the Course: M.tech. in Internet of Things					
Subject:E	Subject:Emulation and Simulation Methodologies				
Course C	ode:PGIT(IoT)301C	Semester: 3 rd			
Duration	: 48 Hours	Maximum Marks: 100			
Teaching	g Scheme	Examination Scheme			
Theory: 3		End Semester Exam: 70			
Tutorial:	0	Attendance: 05			
Practical:	NA	Internal Assessment: 25			
Credit: 3		Practical Sessional internal continuous evaluation: NA			
		Practical Sessional external examination: NA			
Aim:					
Sl. No.					
1.	Key concepts, tools and	l approaches for pattern recognition on complex data sets			
2.	Kernel methods for handling high dimensional and non-linear patterns				
3.	State-of-the-art algorithms such as Support Vector Machines and Bayesian				
	networks				
4.	Theoretical concepts an	nd the motivations behind different learning frameworks			

5.	Be able to s	olve real-world machin	e learning tasks: from d	ata to	inferen	ice	
Objective							
Sl. No.							
1.	This module teaches the fundamentals of simulation and emulation methodologies providing guidance on how to design a performance evaluation campaign,						
2.	Set up a test scenario, select the appropriate models, level of granularity metrics for statistical correctness, and discuss the differences between simulation						
3.	Emulation j of commun		se them for accurate per	form	ance eva	luation	
Pre-Requ	uisite:						
Sl. No.							
1.	Probability	Theory.					
2.	Computer N						
Contents	5				Hrs./w	eek	
Chapter	Name of the	e Topic			Hours	Marks	
01		als of Discrete Event Si	mulations (DES)		8	10	
02	Model-base		S, from communication		8	12	
03	Application packet-leve	-based Granularity Req	uirements: from bit-lev ation, and theirappropr		8	12	
04	Fundament	als on Random Number 'oolsfor Performance Ev		•	12	16	
05		for the evaluation of co	mmunications for ITS.		8	15	
06	Recent tren		nulation for IOT, model		4	5	
	Sub Total:	FF			48	70	
		essment Examination & P	reparation of Semester			30	
	Total:					100	
Practical Skills to	l: be developed	:					
List of Pr	actical: Sl. No	o. 1& 2 compulsory & at	least three from the res	st)			
Assignm	ents:						
List of Bo Text Boo							
Name of		Title of the Book	Edition/ISSN/ISBN		ne of the lisher	9	
Reference	e Books:						
Listafes	winmont/2n	paratus for laboratory e	experiments:				

Sl. No.								
91.								
End Sem 3hrs.	ester Examii	nation Scher	ne. Max	kimum Mar	ks-70.	Time all	otted-	
Group	Unit	(MCQ only	Objective Questions MCQ only with the orrect answer)		Subjective	e Questions	stions	
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks	
А	ALL	10	10					
В	ALL			5	3	5	70	
С	ALL			5	3	15		
• Sr be	e given on top o	of the question	n paper.		in answering of	ojective quest	ions should	
• Sr be	pecific instruct	of the question	n paper. Nester exami Marks o	nation: of each	Question to l	be Ques	tion to be	
• Sr be Examina Group	pecific instruct e given on top (of the question for end sem Chapter	n paper. nester exami Marks o questio	nation: of each n	Question to l	be Ques answ	tion to be	
• S _F be Examina Group	pecific instruct e given on top (of the question for end sem Chapter ALL	n paper. Iester exami Marks o questio 1	nation: of each n	Question to l set 10	be Quest answ 10	tion to be	
• Sr be Examina Group	pecific instruct e given on top (of the question for end sem Chapter	n paper. nester exami Marks o questio	nation: of each n	Question to l	be Ques answ	tion to be	
• Sr be Examina Group A B C	pecific instruct e given on top (for end sem for end sem Chapter ALL ALL ALL ALL	n paper. lester exami Marks of questio 1 5 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be	
• Sp be Examina Group A B C Examina Practical	pecific instruct e given on top o tion Scheme tion Scheme I Internal Ses	of the question for end sem Chapter ALL ALL ALL for Practica ssional Cont	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be	
• Sr be Examina Group A B C Examina Practical Internal	pecific instruct e given on top o tion Scheme tion Scheme I Internal Ses Examinatior	of the question for end sem Chapter ALL ALL ALL for Practica ssional Cont	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be	
• Sr be Group A B C Examina Practical Internal Five No o	pecific instruct e given on top o tion Scheme tion Scheme Internal Ses Examination of	of the question for end sem Chapter ALL ALL ALL for Practica ssional Cont	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be ered	
• Sr be Examina Group A B C Examina Practical Internal	pecific instruct e given on top o tion Scheme tion Scheme Internal Ses Examination of	of the question for end sem Chapter ALL ALL ALL for Practica ssional Cont	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be ered	
• Sr be Examina Group A B C Examina Practical Internal Five No o Experime External I	pecific instruct e given on top o tion Scheme tion Scheme I Internal Ses Examination f ents Examination:	of the question for end sem Chapter ALL ALL ALL for Practica ssional Contin: Examiner-	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be ered	
• Sp be Examina Group A B C Examina Practical Internal Five No o Experime External I Signed Lab	ecific instruct e given on top o tion Scheme tion Scheme Internal Ses Examination of ents Examination: b Note Book(fo	of the question for end sem Chapter ALL ALL ALL for Practica ssional Contin: Examiner-	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be ered 40	
Sr Sr be Sr be C C Examina Group A B C Examina Practical Internal Five No o Experime External I Signed Lat experimen	ecific instruct e given on top o tion Scheme tion Scheme Internal Ses Examination of ents Examination: b Note Book(fo nts)	of the question for end sem Chapter ALL ALL for Practica ssional Cont n: Examiner- r five	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be ered 40	
Sr Signed Late experimen On Spot Ex	ecific instruct e given on top o tion Scheme tion Scheme Internal Ses Examination of ents Examination: b Note Book(fo	of the question for end sem Chapter ALL ALL for Practica ssional Conting Examiner- r five for each	n paper. ester exami Marks o questio 1 5 15 15 15 15	nation: of each n	Question to l set 10 5 5	be Quest answ 10 3	tion to be ered 40	

Name of the Course: M.Tech. in Internet of Things					
Subject:Business Analytics					
Course Code:PGIT(IoT)302A	Semester: 3rd				
Duration: 36 Hours	Maximum Marks:100				
Teaching Scheme	Examination Scheme				
Theory:03	End Semester Exam: 70				
Tutorial:0	Attendance : 5				
Practical:0	Continuous Assessment: 25				
Credit: 03					
Aim:					
Sl. No.					

1.	Understand the role of business analytics within an organization.
2.	Analyze data using statistical and data mining techniques and understand
	relationships between the underlying business processes of an organization.
3.	To gain an understanding of how managers use business analytics to formulate
	and solve business problems and to support managerial decision making.
4.	To become familiar with processes needed to develop, report, and analyze
	business data.
5.	Use decision-making tools/Operations research techniques.
6	Mange business process using analytical and management tools.
7.	Analyze and solve problems from different industries such as manufacturing,
	service, retail, software, banking and finance, sports, pharmaceutical, aerospace
	etc.
Objectiv	e:
Sl. No.	
1.	Students will demonstrate knowledge of data analytics.
2.	Students will demonstrate the ability of think critically in making decisions
	based on data and deep analytics.
3.	Students will demonstrate the ability to use technical skills in predicative and
	prescriptive modelling to support business decision-making.
4	Students will demonstrate the chility to translate date into clean actionable

4.	Students will demonstrate the ability to translate data into clear, actionable
	insights.
Dro-Dogu	

	prescriptive modeling to support business decision-making.	
4.	Students will demonstrate the ability to translate data into clear, ac	tionable
	insights.	
Pre-Requ	isite:	
Sl. No.		
1.		
2.		
Cambanta	11	. / al-

Contents Chantan Name of the Tonic		Hrs./w	eek
Chapter	Name of the Topic	Hours	Marks
01	Unit1:	6	14
	Business analytics: Overview of Business analytics, Scope of		
	Business analytics, Business Analytics Process, Relationship		
	of Business Analytics Process and organisation, competitive		
	advantages of Business Analytics.		
	Statistical Tools: Statistical Notation, Descriptive Statistical		
	methods, Review of probability distribution and data		
	modelling, sampling and estimation methods overview.		
02	Trendiness and Regression Analysis: Modelling Relationships	6	14
	and Trends in Data, simple Linear Regression.		
	Important Resources, Business Analytics Personnel, Data and		
	models for Business analytics, problem solving, Visualizing		
	and Exploring Data, Business Analytics Technology.		
03	Organization Structures of Business analytics, Team	6	14
	management, Management Issues, Designing Information		
	Policy, Outsourcing, Ensuring Data Quality, measuring		
	contribution of Business analytics, Managing Changes.		
	Descriptive Analytics, predictive analytics, predicative		
	Modelling, Predictive analytics analysis, Data Mining, Data		
	Mining Methodologies, Prescriptive analytics and its step in		
	the business analytics Process, Prescriptive Modelling,		
	nonlinear Optimization.		
04	Forecasting Techniques: Qualitative and Judgmental	6	14
	Forecasting, Statistical Forecasting Models, Forecasting		

	Models for Stationary Time Series, Forecasting Models forTime Series with a Linear Trend, Forecasting Time Series withSeasonality, Regression Forecasting with Casual Variables,Selecting Appropriate Forecasting Models.Monte Carlo Simulation and Risk Analysis: Monte CarleSimulation Using Analytic Solver Platform, New-ProductDevelopment Model, Newsvendor Model, Overbooking Model,Cash Budget Model.							
05	Decision Analysis: Formulating Decision Problems, Decision Strategies with the without OutcomeProbabilities,Decision Trees, The Value ofInformation, Utility and Decision Making.							10
06		•			e business elling and Da		6	4
	Sub Total:						36	70
		essment Exan	nination & Pr	eparation of	Semester		<u> </u>	30
	Examination							
Practical	Total:						40	100
List of Bo Text Boo	ooks oks:	on theory	Book	Edition /19	SSN /ISBN	Nam	ne of th	10
List of Bo	ooks oks:	Title of the	Book	Edition/IS	SSN/ISBN	-	ne of th lisher	10
List of Bo Text Boo	ooks oks:	_	Book	Edition/IS	SSN/ISBN	-		10
List of Bo Text Boo Name of Reference	ooks oks: Author ce Books:	Title of the		Edition/IS	SSN/ISBN	Publ	lisher	
List of Bo Text Boo Name of Reference 1.Marc J. Schniede G. Schnie Christop Starkey,	ooks oks: Author ce Books: ce Books: erjans, Dara ederjans, her M.	_	nalytics Concepts,	Edition/IS	SSN/ISBN	Publ	lisher	ne T Press.
List of Bo Text Boo Name of Reference 1.Marc J. Schniede G. Schnie Christop	ooks oks: Author ce Books: ce Books: erjans, Dara ederjans, her M.	Title of the Business an Principles,	nalytics Concepts, ations	Edition/IS	SSN/ISBN	Publ	lisher rson F	
List of Bo Text Boo Name of Reference 1.Marc J. Schniede G. Schnie Christop Starkey,	ooks oks: Author ce Books: ce Books: erjans, Dara ederjans, her M.	Title of the Business an Principles, and Applica	nalytics Concepts, ations	Edition/IS	SSN/ISBN	Publ	lisher rson F	T Press.
List of Bo Text Boo Name of Name of Reference 1.Marc J. Schniede G. Schnie Christop Starkey, 2.James	ooks oks: Author ce Books: ce Books: erjans, Dara ederjans, her M.	Title of the Business an Principles, and Applica Business A	nalytics Concepts, ations nalytics	Edition/IS		Publ	lisher rson F	T Press.
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List of Bo Text Boo Name of Name of I.Marc J. Schnied G. Schnie Christop Starkey, 2.James End Sem 3hrs.	ooks oks: Author ce Books: erjans, Dara ederjans, her M. Evans, ester Examin Unit	Title of the Business an Principles, and Applica Business A Distribution Business A Distribution Business A Distribution Correct answ No of question to be set	nalytics Concepts, ations nalytics ne. Max Questions with the wer) Total Marks	kimum Marl	ks-70. Subjective	Publ	rson F sons E me all stions	T Press. ducation. otted-
List of Bo Text Boo Name of Name of Reference 1.Marc J. Schniede G. Schnie Christop Starkey, 2.James End Sem 3hrs. Group	ooks oks: Author ce Books: erjans, Dara ederjans, her M. Evans, ester Examin	Title of the Business an Principles, and Applica Business A Dation Schem (MCQ only v correct answ No of question	nalytics Concepts, ations nalytics ne. Max Questions vith the wer) Total	kimum Marl	ks-70.	Publ	rson F sons E me all stions	T Press. ducation. otted-

C	A T T			F	2	15		
C	ALL			5	3	15	1	
-	• Only multiple choice type question (MCQ) with one correct answer are to be set in the objective							
 part. Specific instruction to the students to maintain the order in answering objective questions should 								
-		f the question j		lin the order i	n answering of	ojective questi	ons should	
		f or end seme		nation				
Group		Chapter	Marks of		Question to l		tion to be	
Group		chapter	questio		set	answ		
Α		ALL	1		<u>361</u> 10	10 answ	cicu	
B		ALL	5		5	3		
C		ALL	15		<u>5</u>	3		
	Cali and		-		-	3		
		for Practica			on:			
		sional Cont	inuous Eva	luation				
Internal E	xamination	1:						
Continuous	s evaluation						40	
External F	External Examination: Examiner-							
Signed Lab Assignments								
On Spot Experiment								
Viva voce			10				60	

Name of the Course: M.Tech. in Internet of Things						
Subject:In	dustrial Safety					
	de:PGIT(IoT)302B	Semester: III				
Duration: 36 Hours		Maximum Marks:100				
Teaching Scheme		Examination Scheme				
Theory:03		End Semester Exam: 70				
Tutorial:0		Attendance : 5				
Practical:0		Continuous Assessment: 25				
Credit: 03						
Aim:						
Sl. No.						
1						
2						
3.						
Objective:	Γ					
Sl. No.						
1.						
2.						
3.						
Pre-Requis	site:					
Sl. No.						
1.						
2.						
			/			
Contents	N C.1		Hrs./w			
Chapter	Name of the Topic		Hours	Marks		
01	Industrial safety: Accie	dent, causes, types, results and	8	14		

ks s:		
5		
its: Based on theory		
Total:	40	100
•	4	30
Sub Total:	36	70
electrical equipment, advantages of preventive		
compressors, iv. Diesel generating (DG) sets, Program and		
maintenance of: I. Machine tools, ii. Pumps, iii. Air		
· · · · · · ·		
remedies of electric motor, repair complexities and its use,		
overhauling of electrical motor, common troubles and		
Periodic and preventive maintenance: Periodic inspection-	4	14
and their general causes.		
vi. Electrical motors, Types of faults in machine tools		
combustion engine, v. Boiler,		
tree for problems in machine tools, hydraulic, pneumatic,		
fault-finding activities, show as decision tree, draw decision		
decision tree concept, need and applications, sequence of	0	14
A	8	14
affecting the corrosion. Types of corrosion, corrosion		
vii. Ring lubrication, Definition, principle and factors		
and applications, Lubrication methods, general sketch,		
causes, effects, wear reduction methods, lubricants-types		
	8	14
aim of maintenance engineering, Primary and secondary		
Fundamentals of maintenance engineering: Definition and	8	14
	aim of maintenance engineering, Primary and secondary functions and responsibility of maintenance department, Types of maintenance, Types and applications of tools used for maintenance, Maintenance cost & its relation with replacement economy, Service life of equipment. Wear and Corrosion and their prevention: Wear- types, causes, effects, wear reduction methods, lubricants-types and applications, Lubrication methods, general sketch, working and applications, i. Screw down grease cup, ii. Pressure grease gun, iii. Splash lubrication, iv. Gravity lubrication, v. Wick feed lubrication vi. Side feed lubrication, vii. Ring lubrication, Definition, principle and factors affecting the corrosion. Types of corrosion, corrosion prevention methods. Fault tracing: Fault tracing-concept and importance, decision tree concept, need and applications, sequence of fault-finding activities, show as decision tree, draw decision tree for problems in machine tools, hydraulic, pneumatic, automotive, thermal and electrical equipment's like, I. Any one machine tool, ii. Pump iii. Air compressor, iv. Internal combustion engine, v. Boiler, vi. Electrical motors, Types of faults in machine tools and their general causes. Periodic and preventive maintenance: Periodic inspection- concept and need, degreasing, cleaning and repairing schemes, overhauling of mechanical components, overhauling of electrical motor, common troubles and remedies of electric motor, repair complexities and its use, definition, need, steps and advantages of preventive maintenance. Steps/procedure for periodic and preventive maintenance of: I. Machine tools, ii. Pumps, iii. Air compressors, iv. Diesel generating (DG) sets, Program and schedule of preventive maintenance of mechanical and electrical equipment, advantages of preventive maintenance. Repair cycle concept and importance <u>Sub Total:</u> Internal Assessment Examination & Preparation of Semester <u>Examination</u> Total:	preventive steps/procedure, describe salient points of factories act 1948 for health and safety, wash rooms, drinking water layouts, light, cleanliness, fire, guarding, pressure vessels, etc, Safety color codes. Fire prevention and firefighting, equipment and methods.8Fundamentals of maintenance engineering: Definition and aim of maintenance, Types and applications of tools used for maintenance, Maintenance cost & its relation with replacement economy, Service life of equipment.8Wear and Corrosion and their prevention: Wear types, causes, effects, wear reduction methods, lubricants-types and applications, Lubrication methods, general sketch, working and applications, i. Screw down grease cup, ii. Pressure grease gun, iii. Splash lubrication, iv. Gravity lubrication, v. Wick feed lubrication vi. Side feed lubrication, vi. Ring lubrication. Definition, principle and factors affecting the corrosion. Types of corrosion, corrosion prevention methods.8Fault tracing: Fault tracing-concept and importance, decision tree concept, need and applications, sequence of fault-finding activities, show as decision tree, draw decision tree for problems in machine tools, hydraulic, pneumatic, automotive, thermal and electrical equipment's like, I. Any one machine tool, ii. Pump iii. Air compressor, iv. Internal combustion engine, v. Boiler, vi. Electrical motors, Types of faults in machine tools and their general causes.4Periodic and preventive maintenance: Periodic inspection- concept and need, degreasing, cleaning and repairing schemes, overhauling of mechanical components, overhauling of electrical motor, repair complexities and its use, definition, need, steps and advantages of preventive maintenance. Steps/procedure for periodic and preventive maintenance. Steps/procedure for periodic and p

							Pub	lisher	
Reference	e Books:								
1.Higgins	&	Maintenan						nform	ation
Morrow,		Engineerin					Serv	vices.	
2.H. P. Ga	ro	Handbook, Maintenan					S CI	hand a	nd
2.11.1.00	16,	Engineerin						ipany.	nu
3.Audels,		Pump-hyd						rew H	ill
· · ·		Compresso					_	licatio	
4.Winterl	korn, Hans,	Foundation							& Hall
		Engineerin					Lon	don.	
End Some	ester Examin	Handbook,		Maximun	Marl	zc 70		moall	otted-
3hrs.		Iation Schen	Ie.	Maxillull	Mai	xs-70.	11	ine an	olleu-
Group	Unit	Objective	Questio	15		Subjective	e Ques	Ouestions	
-		(MCQ only with the							
		correct answ		N		m			m . 1
		No of question	Total Marks	No o ques		To answer	ques	ks per	Total Marks
		to be set	Marks	to be			ques	tion	Marks
А	ALL	10	10						
В	ALL			5		3	5		70
D				5		3	5		/0
С	ALL			5		3	15		
	ly multiple ch	oice type ques	tion (MCQ) with one	correct	t answer are to	be set	t in the	objective
pa									
	ecific instructi			intain the o	order in	n answering ol	bjective	e questi	ons should
	given on top o ion Scheme			amination	1:				
Group		Chapter		ks of each		Question to be		e Question to be	
-		-	que	stion		set	answered		ered
A		ALL	1			10		10	
B		ALL	5			5		3	
<u>C</u>	·· · · ·	ALL	15	1		5		3	
	tion Scheme					on:			
	Internal Se Examination		tinuous	Evaluatio	n				
	us evaluation								4
	Examinatio		<u> </u>						4
EAU Hal			10						
Signed La		1100	110						
Signed La	Experiment		40						

Course Co	de:PGIT(IoT)302C Semester: 3rd			
Duration :)		
Teaching	Scheme Examination Scheme)		
Theory:03	End Semester Exan	n: 70		
Tutorial:0	Attendance : 5			
Practical:0	Continuous Assess	ment: 25		
Credit: 03				
Aim:				
Sl. No.				
1.				
2.				
3.				
Objective	-			
Objective: Sl. No.				
<u>31. NO.</u> 1.	Students should able to apply the dynamic p	rogramming to so	lve nroh	lems of
1 1	discreet and continuous variables.	1 v ⁶¹ amming to 30	ive prob	
2.	Students should able to apply the concept of	non-linear progra	amming	
3.	Students should able to carry out sensitivity			
4.	Student should able to model the real world	v	ulate it.	
Pre-Requi		•		
Sl. No.				
Sl. No. 1.				
Sl. No. 1. 2.				
Sl. No. 1. 2. Contents			Hrs./w	
Sl. No. 1. 2. Contents Chapter	Name of the Topic		Hours	Marks
Sl. No. 1. 2. Contents Chapter	Name of the Topic Optimization Techniques, Model Formulatio			
Sl. No. 1. 2. Contents Chapter	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique		Hours	Marks
Sl. No. 1. 2. Contents Chapter 01	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models	es, Sensitivity	Hours 7	Marks 14
Sl. No. 1. 2. Contents Chapter 01	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution rev	es, Sensitivity vised simplex	Hours	Marks
Sl. No. 1. 2. Contents Chapter 01 02	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution rev method - duality theory - dual simplex metho	es, Sensitivity vised simplex	Hours 7	Marks 14
Sl. No. 1. 2. Contents Chapter 01 02	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution re- method - duality theory - dual simplex metho analysis - parametric programming	es, Sensitivity vised simplex od - sensitivity	Hours 7	Marks 14
Sl. No. 1. 2. Contents Chapter 01 02	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution rev method - duality theory - dual simplex metho	es, Sensitivity vised simplex od - sensitivity cker conditions	Hours 7 8	Marks 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution re- method - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tu	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT	Hours 7 8	Marks 14 14
Sl. No. 1. 2. Contents Chapter 01	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution re- method - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tu- min cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory mod	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels -	Hours 7 8 7 7	Marks 14 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution re- method - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tu- min cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory mod Probabilistic inventory control models - Geo	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels -	Hours 7 8 7 7	Marks 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03 04	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution re- method - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tu- min cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory mod Probabilistic inventory control models - Geo Programming.	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels - metric	Hours 7 8 7 7 7 7	Marks 14 14 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03 04	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution re- method - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tu- min cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory mod Probabilistic inventory control models - Geo Programming. Competitive Models,Single and Multi-channe	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels - metric el Problems,	Hours 7 8 7 7	Marks 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03 04	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution rev method - duality theory - dual simplex method analysis - parametric programming Nonlinear programming problem - Kuhn-Tumin cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory models Probabilistic inventory control models - Geo Programming. Competitive Models, Single and Multi-channe Sequencing Models, Dynamic Programming,	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels - metric el Problems,	Hours 7 8 7 7 7 7	Marks 14 14 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03 04	Name of the TopicOptimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control ModelsFormulation of a LPP - Graphical solution rev method - duality theory - dual simplex metho analysis - parametric programmingNonlinear programming problem - Kuhn-Tu min cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory mode Probabilistic inventory control models - Geo Programming.Competitive Models, Single and Multi-channed Sequencing Models, Dynamic Programming, Networks, Elementary Graph Theory, Game	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels - metric el Problems,	Hours 7 8 7 7 7 7	Marks 14 14 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution remethod - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tumin cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory models Probabilistic inventory control models - Geo Programming. Competitive Models, Single and Multi-channels Sequencing Models, Dynamic Programming, Networks, Elementary Graph Theory, Game TheorySimulation	es, Sensitivity vised simplex od - sensitivity cker conditions CPM/PERT nd multiple lels - metric el Problems,	Hours 7 7 8 7 7 7 7 7 7	Marks 14 14 14 14 14
Sl. No. 1. 2. Contents Chapter 01 02 03 04	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution reve method - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tue min cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory models Probabilistic inventory control models - Geo Programming. Competitive Models,Single and Multi-channed Sequencing Models, Dynamic Programming, Networks, Elementary Graph Theory, Game TheorySimulation Sub Total:	es, Sensitivity vised simplex od - sensitivity cker conditions <u>CPM/PERT</u> nd multiple lels - metric el Problems, Flow in	Hours 7 8 7 7 7 7 7 36	Marks 14 14 14 14 14 70
Sl. No. 1. 2. Contents Chapter 01 02 03 04	Name of the Topic Optimization Techniques, Model Formulatio General L.R Formulation, Simplex Technique Analysis, Inventory Control Models Formulation of a LPP - Graphical solution remethod - duality theory - dual simplex metho analysis - parametric programming Nonlinear programming problem - Kuhn-Tumin cost flow problem - max flow problem - Scheduling and sequencing - single server ar server models - deterministic inventory models Probabilistic inventory control models - Geo Programming. Competitive Models, Single and Multi-channels Sequencing Models, Dynamic Programming, Networks, Elementary Graph Theory, Game TheorySimulation	es, Sensitivity vised simplex od - sensitivity cker conditions <u>CPM/PERT</u> nd multiple lels - metric el Problems, Flow in	Hours 7 7 8 7 7 7 7 7 7	Marks 14 14 14 14 14

nts: Based o	on theory					
uthor	Title of the	Book	Edition/I	SSN/ISBN	Name of the Name o	
Books:						
ıa,	-				PHI, 2008	
igner,					PHI, Delhi	, 1982.
	Introduction Optimisati	on to on:			Jain Broth 2008	ers, Delhi,
	Libermann				McGraw H 2009	lill Pub.
selvam,	Operations Research					Iall of India
M Wagner,	Principles of Operations Research				Prentice H 2010	Iall of India
	paratus for	laboratory e	-			
ster Examin	lation Schen	ne. Max	amum Mar	ks-70.	Time all	lotted-
Unit	(MCQ only	with the		Subjective	Questions	
	question	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
ALL	10	10				
ALL			5	3	5	70
ALL			5	3	15	
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ly multiple cho t.	on to the stud			t answer are to		-
ly multiple cho rt. ecific instructi given on top o	on to the stud of the question for end sem	ents to mainta paper. ester exami	in the order i nation:	n answering ob	ojective quest	ions should
ly multiple cho rt. ecific instructi given on top o	on to the stud of the question	ents to mainta paper. ester examin Marks o	in the order i nation: f each	n answering ob Question to l	ojective quest	ions should tion to be
ly multiple cho rt. ecific instructi given on top o	on to the stud of the question for end sem	ents to mainta paper. ester exami	in the order i nation: f each n	n answering ob	ojective quest	ions should tion to be
	oks cs: author Books: a, gner, c, selvam, M Wagner, iipment/ap ster Examin Unit ALL	selvam, Operations Selvam, Operations selvam, Operations Dipment/apparatus for I ster Examination Schem Unit Objective (MCQ only v correct answ No of question to be set ALL 10	oks ss: Author Title of the Book Title of the Book Title of the Book Derations Research, An Introduction, Principles of Operations Research, An Introduction to Operations Research, Libermann Operations Research, Libermann Operations Research Selvam, Operations Research Selvam, Operations Research M Wagner, Principles of Operations Research Selvam, Operations Research Selvam, Operations Research M Wagner, Principles of Operations Research M Wagner, Principles of Operations Research M Wagner, Operations Research 10 ALL 10 10	oks ss: Author Title of the Book Edition/I Build Intervention Research, An Introduction, Introduction, Introduction to Operations Research, Jubermann Operations Research, Libermann Operations Research, Libermann Operations Research Selvam, Operations Research M Wagner, Principles of Operations Research Selvam, Operations Research Selvam, Operations Research Selvam, Operations Research M Wagner, Principles of Operations Research Selvam, Operations Research Selvam, Operations Research M Wagner, Principles of Operations Research Selvam, Operations Research All 10 10 ALL 10 10	oks ss: author Title of the Book Edition/ISSN/ISBN Book Edition/ISSN/ISBN Edition/ISSN/ISSN/ISBN Edition/ISSN/ISSN/ISBN Edition/ISSN/ISSN/ISBN Edition/ISSN/ISSN/ISSN/ISSN/ISSN/ISSN/ISSN/ISS	bks ts: tuthor Title of the Book Edition/ISSN/ISBN Name of th Publisher Books: ta, Operations Research, An Introduction, An Introduction, An Introduction, PHI, 2008 An Introduction, PHI, 2008 An Introduction to Operations Research, 2008 Operations Research, 2008 Operations Research, 2008 Operations Research, 2008 Operations Research, 2008 Operations Research 2009 Selvam, Operations Research 2010 Itipment/apparatus for laboratory experiments: ster Examination Scheme. Maximum Marks-70. Time all Vinit Objective Questions Correct answer) No of Total Marks Question to be set 4 ALL 10 10 ALL 10 10 ALL 5 3 3 5

Examination Scheme for Practical S	bessior	al examination:
Practical Internal Sessional Continu	ious E	valuation
Internal Examination:		
Continuous evaluation		40
External Examination: Examiner-		
Signed Lab Assignments	10	
On Spot Experiment	40	
Viva voce	10	60

	Course: M.Tech. in Inte t Management of Engin	8					
	e:PGIT(IoT)302D	Semester: 3rd					
Duration: 3		Maximum Marks:100					
Teaching Scheme		Examination Scheme					
Theory:03		End Semester Exam: 70					
Tutorial:0		Attendance : 5					
Practical:0		Continuous Assessment: 25					
Credit: 03							
Aim:							
Sl. No.							
1.							
2.							
3.							
Objective :							
Sl. No.							
1.							
2.							
3.							
Pre-Requisi	te:						
Sl. No.							
1.							
2.							
			•	_			
Contents			Hrs./w				
Chapter	Name of the Topic		Hours	Marks			
01	Introduction and Ove Management Process	rview of the Strategic Cost	4	4			
02	<u> </u>	sion-making; Relevant cost,	6	6			
02	-	emental cost and Opportunity cost.	0	Ŭ			
	1	g System; Inventory valuation;					
		e for operational control; Provision of					
	data for Decision-Mal						
03		ferent types, why to manage, cost	6	10			
		ious stages of project execution:					
		ssioning. Project execution as					
	-	chnical and non- technical activities.					
04		activities. Pre project execution main	8	20			
	clearances and docum	nents Project team: Role of each					
	member. Importance	Project site: Data required with					

	1 10		1	-			
	•	ance. Project contracts. Ty	-	ect			
		on Project cost control. Baı n. Project commissioning: 1		22			
	•	havior and Profit Planning	-	,5			
		tion between Marginal Cost	U				
	Costing	; Break-even Analysis, Cost	t-Volume-Profit Analys	sis.			
05		decision-making problem	6	d	3	10	
<u> </u>		e Analysis. Pricing strategi			_	10	
06	0	costing, Life Cycle Costing.	0	or.	5	10	
		time approach, Material Re rise Resource Planning, Tot		nt			
		eory of constraints. Activity		II.			
		ment, Bench Marking; Bala					
	-	hain Analysis. Budgetary C		ets;			
		nance budgets; Zero-based	0	nt			
		ional profitability pricing o	decisions including				
07		r pricing. ative techniques for cost m	anagament I		1	10	
07	•	ative techniques for cost m nming, PERT/CPM, Transp	0,		4	10	
	0	nent problems, Simulation	. .	rv.			
			,	<u> </u>			
	Sub Tot	al:			36	70	
		Assessment Examination & Preparation of Semester				30	
	Examina Total:	ition			40	100	
	1000					200	
List of Boo Text Book							
Name of A	uthor	Title of the Book	Edition/ISSN/ISBN	-	ne of tł	ne	
				Pub	lisher		
Reference	Books:	Coat Accounting - A		D	ntice P		
1.					nuce H	Prentice Hall of India, New Delhi	
		Managerial Emphacie		-	a Nou	/ Deini	
2. Cha	arles T.	Managerial Emphasis, Advanced Management		-	ia, New	Deini	
2. Cha Horngren		Managerial Emphasis, Advanced Management Accounting		-	ia, New	Denn	
Horngren George Fo	and ster,	Advanced Management		-	ia, New		
Horngren George Fo 3. Ro	and ster, bert S	Advanced Management Accounting Management & Cost		-	ia, New		
Horngren George Fo 3. Ro Kaplan An	and ster, bert S	Advanced Management Accounting		-	ia, New		
Horngren George Fo 3. Ro Kaplan An Alkinson,	and oster, bert S othony A.	Advanced Management Accounting Management & Cost Accounting		Ind			
Horngren George Fo 3. Ro Xaplan An Alkinson, 4. Asl	and oster, bert S othony A. hish K.	Advanced Management Accounting Management & Cost Accounting Principles & Practices		Ind			
Horngren George Fo 3. Ro Kaplan An Alkinson, 4. Asl Bhattacha	and oster, bert S othony A. hish K. orya,	Advanced Management Accounting Management & Cost Accounting Principles & Practices of Cost Accounting A. H.		Ind	eeler p	ublisher	
Horngren George Fo 3. Ro Kaplan An Alkinson, 4. Asl Bhattacha	and oster, bert S othony A. hish K.	Advanced Management Accounting Management & Cost Accounting Principles & Practices of Cost Accounting A. H. Quantitative		Ind Wh Tat	eeler p a McGr	ublisher aw Hill	
Horngren George Fo 3. Ro Kaplan An Alkinson, 4. Asl Bhattacha	and oster, bert S othony A. hish K. orya,	Advanced Management Accounting Management & Cost Accounting Principles & Practices of Cost Accounting A. H. Quantitative Techniques in		Ind Wh Tat	eeler p	ublisher aw Hill	
Horngren George Fo 3. Ro Kaplan An Alkinson, 4. Asl Bhattacha	and oster, bert S othony A. hish K. orya,	Advanced Management Accounting Management & Cost Accounting Principles & Practices of Cost Accounting A. H. Quantitative		Ind Wh Tat	eeler p a McGr	ublisher aw Hill	
Horngren George Fo 3. Ro Kaplan An Alkinson, 4. Asl Bhattacha 5. N.I List of equ	and oster, bert S othony A. hish K. orya, D. Vohra, upment/ap	Advanced Management Accounting Management & Cost Accounting Principles & Practices of Cost Accounting A. H. Quantitative Techniques in Management,	periments: num Marks-70.	Ind Wh Tat Boo	eeler p a McGr	ublisher aw Hill td.	

Group										
	Unit	Objective (MCQ only v correct answ			Subjective Questions					
		No of question to be set	Total Mar	ks No of question to be set		Marks per question	Total Marks			
А	ALL	10	10							
В	ALL			5	3	5	70			
С	ALL			5	3	15				
be g	given on top o	of the question for end sem Chapter	paper. ester exan		in answering of Question to		tion to be			
Group		Chapter	questi		set	answ				
Α		ALL	1		10	10				
В		ALL	5		5	3				
С		ALL	15		5	3				
				al examinati	on:					
		ssional Con	tinuous Ev	aluation						
							40			
	s evaluation	n: Examine					40			
			<u>r-</u>							
On Spot E	b Assignme vperiment	1115	40							
Viva voce	Aperment		10				60			

Name of the Course: M.Tech. in Int	ernet of Things
Subject:Composite Materials	
Course Code:PGIT(IoT)302E	Semester: III
Duration: 36 Hours	Maximum Marks:100
Teaching Scheme	Examination Scheme
Theory:03	End Semester Exam: 70
Tutorial:0	Attendance : 5
Practical:0	Continuous Assessment: 25
Credit: 03	
Aim:	
Sl. No.	
1.	
2.	
3.	
Objective:	
Sl. No.	
1.	
2.	
3.	

Pre-Requ Sl. No.			
1.			
2.			
Contents			eek
Chapter	Name of the Topic	Hours	Marks
01	INTRODUCTION: Definition – Classification and	7	14
	characteristics of Composite materials. Advantages and		
	application of composites. Functional requirements of		
	reinforcement and matrix.		
	Effect of reinforcement (size, shape, distribution, volume		
	fraction) on overall composite performance.		
02	REINFORCEMENTS: Preparation-layup, curing, properties and	7	14
	applications of glass fibers, carbon fibers, Kevlar fibers and		
	Boron fibers. Properties and applications of whiskers,		
	particle reinforcements. Mechanical Behavior of composites:		
	Rule of mixtures, Inverse rule of mixtures. Isostrain and		
	Isostress conditions.		
03	Manufacturing of Metal Matrix Composites: Casting – Solid	7	14
	State diffusion technique, Cladding – Hot isostatic pressing.		
	Properties and applications. Manufacturing of Ceramic Matrix		
	Composites: Liquid Metal Infiltration – Liquid phase sintering.		
	Manufacturing of Carbon – Carbon composites: Knitting,		
	Braiding, Weaving. Properties and applications.		
04	Manufacturing of Polymer Matrix Composites: Preparation of	8	14
	Moulding compounds and prepregs – hand layup method –		
	Autoclave method – Filament winding method – Compression		
	moulding – Reaction injection moulding. Properties and		
05	applications.	_	
05	Strength: Laminar Failure Criteria-strength ratio, maximum	7	14
	stress criteria, maximum strain criteria, interacting failure		
	criteria, hygrothermal failure. Laminate first play failure-		
	insight strength; Laminate strength-ply discount truncated		
	maximum strain criterion; strength design using caplet plots; stress concentrations.		
		26	70
	Sub Total: Internal Assessment Examination & Preparation of Semester	36	
	Examination	4	30
	Total:	40	100
		TU	100

List of Books

Text Books:

TEAT DOORS.			
Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the
			Publisher
1. R.W.Cahn	Material Science and	Vol 13	VCH, West Germany.
	Technology		_
2.WD Callister, Jr.,	Materials Science and	Indian edition, 2007.	John Wiley & Sons,
Adapted by R.	Engineering, An		NY,
Balasubramaniam,	introduction.		

				ional examin	ation:			
			ntinuou	s Evaluation				
	l Examinati							
	ous evaluation							4
		ion: Examin		1				
	Lab Assignm			10				
	Experiment			40				
Viva vo	ce		1	10				
Reference	Books							
1. Lu		Hand Book	of					
1. Du		Composite	-	ls				
2. K.	K.Chawla.	Composite						
		-						
3. De	eborah D.L.	Composite		ls				
Ch	ung.	Science and						
		Application						
	Gay, Suong	Composite		ls				
V. Hoa, an W. Tasi.	ld Stephen	Design and Application						
	stor Fyamin	ation Schem		Maximum Ma	arks.70	 	imo all	otted-
Shrs.			IC.		II K3-70.	1	inic an	oncu
Group	Unit	Objective (MCQ only v		ns	Subjectiv	e Ques	estions	
		correct answ						
		No of	Total	No of	To answer	Marl	ks per	Total
		question	Marks	question		ques	stion	Marks
-		to be set		to be set				
4	ALL	10	10					
3	ALL			5	3	5		70
)	ALL			5	5	5		/0
	ALL			5	3	15		
	ly multiple ch	pice type quest	tion (MCQ) with one corr	ect answer are t	o be se	t in the	objective
pa								
				intain the orde	r in answering o	bjectiv	e questi	ions should
		f the question for end sem		mination.				
Group	ion scheme	Chapter		ks of each	Question to	he	Οιιος	tion to be
uroup		enupter		stion	set	be	answ	
4		ALL	1		10		10	
B		ALL	5		5		3	
2		ALL	15		5		3	
		1.Tech. in Inte	ernet of 7	Гhings				
	aste to Ener	0,						
	ode:PGIT(Io	Г)302F		ter: 3rd				
	36 Hours			um Marks:10				
Feaching				nation Schen				
Гheory:03	i i i i i i i i i i i i i i i i i i i		End S	emester Exa	m:/0			
Tutorial:0			A · ·	dance : 5				

Continuous Assessment: 25

Practical:0

Credit: 03

Aim:			
Sl. No.			
1.			
2.			
3.			
Objective	2:		
Sl. No.			
1.			
2.			
3.			
Pre-Requ	lisite:		
Sl. No.			
1.			
2.			
<i>2</i> .			
Contents		Hrs./w	eek
Chapter	Name of the Topic	Hours	Marks
01	Introduction to Energy from Waste: Classification of waste as	7	14
01	fuel – Agro based, Forest residue, Industrial waste - MSW –	'	
	Conversion devices – Incinerators, gasifiers, digestors		
02	Biomass Pyrolysis: Pyrolysis – Types, slow fast – Manufacture	7	14
02	of charcoal – Methods - Yields and application – Manufacture	'	
	of pyrolytic oils and gases, yields and applications.		
03	Biomass Gasification: Gasifiers – Fixed bed system –	7	14
05	Downdraft and updraft gasifiers – Fluidized bed gasifiers –	'	11
	Design, construction and operation – Gasifier burner		
	arrangement for thermal heating – Gasifier engine		
	arrangement and electrical power – Equilibrium and kinetic		
	consideration in gasifier operation.		
04	Biomass Combustion: Biomass stoves – Improved chullahs,	7	14
01	types, some exotic designs, Fixed bed combustors, Types,	'	
	inclined grate combustors, Fluidized bed combustors, Design,		
	construction and operation - Operation of all the above		
	biomass combustors.		
05	Biogas: Properties of biogas (Calorific value and composition)	8	14
	- Biogas plant technology and status - Bio energy system -		
	Design and constructional features - Biomass resources and		
	their classification - Biomass conversion processes - Thermo		
	chemical conversion - Direct combustion - biomass		
	gasification - pyrolysis and liquefaction - biochemical		
	conversion - anaerobic digestion - Types of biogas Plants -		
	Applications - Alcohol production from biomass - Bio diesel		
	production - Urban waste to energy conversion - Biomass		
	energy programme in India.		
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester	4	30
	Examination		
	Total:	40	100
Practical			
Assignm	ents: Based on theory		

T • /•	on Schom	e for Practic	al Sessional	examinati	ion·			
С		ALL	15		5	3		
B		ALL	5		5	3		
A		ALL	question	1	set 10	answ 10	ered	
Group		Chapter	Marks o	f each	Question to	-	tion to be	
• Spec be g	cific instruct iven on top	ion to the stude of the question e for end sem	paper.		in answering ol	ojective quest	ions should	
• Only part	-	oice type ques	tion (MCQ) wit	h one corre	ct answer are to	be set in the	objective	
C	ALL			5	3	15		
В	ALL			5	3	5	70	
A	ALL	to be set 10	10	to be set				
		No of question	Total Marks	No of question	To answer	Marks per question	Total Marks	
		correct answ						
Group	Unit	(MCQ only v	Questions with the		SUDJECTIVE	Questions		
Shrs.	Unit	Objective	Questions		Subjective	Questions		
	ter Exami	nation Schen	ne. Max	imum Ma	rks-70.	Time al	lotted-	
96.								
95.								
<u> </u>								
<u>92.</u> 93.								
Sl. No.								
List of equi	ipment/ap	paratus for l	laboratory e	xperiment	ts:	1		
Brobby and Hagan,	a E. B.	and Technology,				1996.		
4.C. Y. Wer		Biomass Co				John Wiley & So		
·	·	Food, Feed and Fuel from Biomass,				Pvt. Ltd., 1	1991.	
3.Challal, D						1983. IBH Publi		
2.Khandelwal, K. C. and Mahdi, S. S.,		Biogas Technology - A Practical Hand Book -		Vol. I & II,		Tata McGraw Hill Publishing Co. Ltd.,		
1.Desai, Ashok V.,		Non-Conventional Energy,				Wiley Eastern Ltd., 1990.		
Reference	Books:							
	Text Books: Name of Author		Title of the Book		Edition/ISSN/ISBN		Name of the Publisher	
Name of Au	ıthor	Title of the	Book	Edition/	ISSN/ISBN	Name of t	ho	

Continuous evaluation		40
External Examination: Examiner-		
Signed Lab Assignments	10	
On Spot Experiment	40	
Viva voce	10	60

Name of the Course: M.Tech. in Internet of Things Subject: Dissertation-I /Industrial Project			
Course Code:PGIT(IoT)392 Semester: 3 rd			
Teaching Scheme	Examination Scheme100		
Theory:0	End Semester Exam:		
Tutorial:0	Teacher's Assessment:0		
Practical:20	Internal Assessment:0		
Credit:10	Practical Sessional internal continuous evaluation:40		
	Practical Sessional external examination:60		

Content

The dissertation / project topic should be selected / chosen to ensure the satisfaction of the urgent need to establish a direct link between education, national development and productivity and thus reduce the gap between the world of work and the world of study. The dissertation should have the following

Relevance to social needs of society

Relevance to value addition to existing facilities in the institute

Relevance to industry need

Problems of national importance

Research and development in various domain The

student should complete the following:

Literature survey Problem Definition

Motivation for study and Objectives

Preliminary design / feasibility / modular approaches

Implementation and Verification

Report and presentation

The dissertation stage II is based on a report prepared by the students on dissertation allotted to them. It may be based on:

Experimental verification / Proof of concept.

Design, fabrication, testing of Communication System.

The viva-voce examination will be based on the above report and work.

Semester IV

Name of the Course:M.Tech. in	Internet of Things
Subject:Dissertation II	
Course Code:PGIT(IoT)491	Semester: 3 rd
Teaching Scheme	Examination Scheme100
Theory:0	End Semester Exam:
Tutorial:0	Teacher's Assessment:0
Practical:32	Internal Assessment:0
Credit:16	Practical Sessional internal continuous evaluation:40
	Practical Sessional external examination:60
Contents	

Students will do projects on application areas of latest technologies and current topics of societal relevance.

Guidelines for Dissertation Phase-I and II

As per the AICTE directives, the dissertation is a yearlong activity, to be carried out and evaluated in two phases i.e. Phase – I: July to December and Phase – II: January to June. The dissertation may be carried out preferably in-house i.e. department's laboratories and centers OR in industry allotted through department's T & P coordinator.

After multiple interactions with guide and based on comprehensive literature survey, the student shall identify the domain and define dissertation objectives. The referred literature should preferably include IEEE/IET/IETE/Springer/Science Direct/ACM journals in the areas of Computing and Processing (Hardware and Software), Circuits-Devices and Systems, Communication-Networking and Security, Robotics and Control Systems, Signal Processing and Analysis and any other related domain. In case of Industry sponsored projects, the relevant application notes, while papers, product catalogues should be referred and reported.

Student is expected to detail out specifications, methodology, resources required, critical issues involved in design and implementation and phase wise work distribution, and submit the proposal within a month from the date of registration.

Phase – I deliverables: A document report comprising of summary of literature survey, detailed objectives, project specifications, paper and/or computer aided design, proof of concept/functionality, part results, A record of continuous progress.

Phase – I evaluation: A committee comprising of guides of respective specialization shall assess the progress/performance of the student based on report, presentation and Q & A. In case of unsatisfactory performance, committee may recommend repeating the Phase-I work.

During phase – II, student is expected to exert on design, development and testing of the proposed work as per the schedule. Accomplished results/contributions/innovations should be published in terms of research papers in reputed journals and reviewed focused conferences OR IP/Patents.

Phase – II deliverables: A dissertation report as per the specified format, developed system in the form of hardware and/or software, A record of continuous progress.

Phase – II evaluation: Guide along with appointed external examiner shall assess the progress/performance of the student based on report, presentation and Q & A. In case of unsatisfactory performance, committee may recommend for extension or repeating the work