VIDISKA M. S.				SAN (An	IRAT A (En Autono	ASHO gineer omous DEP	K TE ing C Instit ARTN	CCHN College tute A MENT	OLOC e), VII ffiliate f OF (	GICAL IN DISHA M ed to RGH CS & IT	ISTITU I.P. PV Bhoj	TE pal)			
Semester/Yea	r	Ι	V/II			Progr	am			B	.Tech –	Inte	rnet o	f Things	
Subject Category	DC	Subje	ect Code	:	IO 40	1	Su N	ibject ame		Microp	rocesso	rs ar	nd Mie	crocontr	ollers
			Maximu	ım Marl	s Allot	ted						Cont	tact H	ours	Total
FS	T MS	Theory	anmont	01	iz F	P S	ractio 1 W	cal	uiz	Total Marks		T	т	P	Credits
<u>60</u>	20	A551	<u>gninent</u> 10	1	) 3	30	10	1	0	150	,	<u>L</u> 3	0	2	4
Prerequisites	: · · · · · ·	• 1	•												
Course Object	ing and Lo	ogical reas	oning.												
To make	students f	amiliar wi	th the ba	sic block	s of 8 b	it Mic	ocon	troller	& 16	bit micror	processo	r dev	ice in	general.	
<ul><li>To provid</li><li>To use as</li></ul>	de compre ssembly ar	hensive kr 1d high lev	nowledge vel langu	e of the a ages to in	rchitect nterface	ure, fe the mi	atures croco	and in a stand in a standard s	nterfac er to va	ring with parious dev	periphera	al de	vices.	0	
UNITs					Des	criptio	ons							H	rs.
Ι	Introduct Architec	tion to 1 ture, Pin	l6 bit diagran	Micropro n, Instru	cessor- ction	Introdi set, A	action ssem	to bler d	8086 lirectiv	Micropro ve, Addr	essing	fami mode	ily es,	8	3
	Microco	ntrollers a	nd Embe	edded pro	ration, ocessors	over	ntary view o	80801 of 805	Progra 1 fami	mming. ilv 8051 i	nicroco	ntroll	er		
	hardware	e, oscillato	or and clo	ock, CPU	J registe	ers, Re	gister	banks	and s	tack, flag	s, PSW,	SFR	's,		
II	I/O port	s, internal	memor	y, 8051	pin des	criptic	n. 80	)51 pr	ogram	ming mod	del, Ass	embl	ly,	8	3
	Languag	e program	ming, D	odes Bit	address	ives. A	Iddres	ssing r nd R A	nodes $M I/C$	018051, 1	memory orammi	acce	ess		
	Arithmet	tic Operat	ions wit	th $8051$ :	Arithm	netic in	1 or al	tions,	signed	d number	concep	ots a	nd		
	arithmeti	c operatio	ons. Brai	nch Instr	uctions	: Jump	Loop	p and	Call 1	Instruction	ns, Time	e del	ay		
III	calculati	ons. Logi	cal Ope	rations	& Bit	manip	ilatio	n inst	ruction	ns: Logic	and co	ompa	are	8	3
	with carr	y, reading	input pi	ns.	1011S, Ua	ila serri	ilizati	ion, sn	ligie di	it mstructi	ons, ope	auo	115		
	Timers:	Programi	ning, C	Counter	program	nming	Ser	rial co	ommui	nication,	RS232,	80	51		
IV	program	ming for s	erial por	rt, Serial	Port pr	ogram	ning,	8051	Interru	upts, prog	ramming	g tim	er	8	3
	8051. Int	s, external terrupt pro	grammir	ng.	pts, ser	iai con	IIIIuIII	Ication	merr	upis, mier	rupt pri	ority	m		
	Interface	8051, LC	D Interfa	acing, m	emory a	ddress	deco	ding, i	nterfa	cing with	external	ROI	M,		
v	data mer	nory space	e, access	ing exter	mal mei	nory i	ı C, I	nterfa	cing 82	255, prog	ramming	g 825	5,	8	3
	modes o 8255	f 8255, 82	255 coni	nection t	o stepp	er mot	or, L	CD,&	ADC,	, 8051 pro	ogramm	ing f	or		
Total Hours	0255.													4	0
Course Outco	omes:														
CO 1: Acquir	e and dem	onstrate fu	indament	tal know	ledge of	micro	proce	essors	or inter	rfacing an	d progra	ammi	ng		
CO 2: Unders	tanding th	e fundame	ntals of a	8051 mic	vith the	oller.	f instr	ruction	16						
CO 4: Analyz	e the conc	ept of Tim	er, Seria	al Comm	unicatio	n and	nterru	upt.	15.						
CO5: To unde	erstand the	interfacin	g of 805	1 microc	ontrolle	r with	peripl	heral c	levices	5.					
Text Book	0 K M D		. 1	1.5.0			<b>D</b> '	1 1	<u> </u>			1. 1 .		x	• •. •
I. AKRay 2 MAMa	& K M B	hurchandı, Mazidi anı	, Advanc d R D M	ced Micro	process The 8	sor and	Perip	pheral,	Tata I er and	McGraw-J L Embedde	Hill Pub ed Syste	lishii ms	1g Coi Using	npany L Assemb	imited.
Pearson.	2101, 3 0 1			ferimey	, The o	051 101		ontion			cu sysic	1115.	Using	Assenio	iy and C,
<b>Reference Bo</b>	oks														
1. Ramesh	S Goanka	ar, Microp	processo	r Archit	ecture,	Progra	mmin	1g &	Applic	cations w	ith the	8085	5, Pen	ram Inte	ernational
2. Douglas	ig (India) I V. Hall. N	Pvt. Ltd., I ficroproce	ourth Ea	dition, 20 d interfac	202. 2019 pro	gramm	ing ai	nd har	dware	Gregg Di	vision. N	McGi	raw-H	ill. 1986	
List/Links of	e-learning	g resource	9		ing pro	<u>51 unini</u>	ing u	na na	aware	01055 01	151011, 1	100	<u>u () 11</u>	, 1900	
https://	//archive.i	nptel.ac.in/	/courses/	/108/105	/108105	102/									
Modes of Eva	luation a	nd Rubric							• / •	•		1	1		
The evaluation	n modes c	onsist of p	performa	ince in ty	vo mid	semes	ter Te	ests, Q	u1z/As	ssignment	s, term	work	, end	semester	practical
CO-PO Map	oing:														
COs PC	D <sub>1</sub> PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO	ı F	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	P	<b>PO</b> 12	PSO1	PSO2

CO-1	2	2	1										1	2
CO-2	2	2	2										1	2
CO-3	2	2	2	1									1	2
<b>CO-4</b>	3	2	2	1									1	2
CO-5	2	2	1	1									1	2
Suggestiv	ve list of	experin	nents:											
1. WAI	to add a	a data by	rte locate	d at the	offset ad	dress 05	00H in th	ne segme	ent 20001	H to anot	her data	byte locat	ed at the	offset
addre	ess 06001	H in the	segment	3000H.										
2. WAI	to move	e 0500H	to regist	er BX aı	nd CX, a	dd 05H (	to each o	f them a	nd store	the resul	t in 0700	H. Segme	nt addres	s:
5000	5000H. WAD to add the contents of 2000H to the contents of 2000H of doors the result in 5000H 0700H													
3. WAI	WAP to add the contents of 2000H: 0500H to the contents of 3000H: 0600H and store the result in 5000H: 0700H.													
4. WAI	o to find	the squa	re of a gi	iven num	ber.									
5. WAI	o to find	the 2's c	omplime	ent of a g	iven nur	nber.								
6. WAI	o to find	the squa	re root o	f a given	number									
7. WAI	to arran	ige the g	iven set	of bytes	in ascend	ling orde	er.							
8. WAI	to arran	ige the g	iven set	of bytes	in the de	scending	g order.							
9. WAI	to find	out the l	argest nu	mber in	the give	n set of 8	- 3-bit nun	nber stor	ed at me	mory loc	ation 050	00H in the	segment	2000H.
10. WAI	to find	out the e	even and	odd nun	bers from	m the give	ven set o	f 10 data	ı bytes st	ored at r	nemory le	ocation 40	00H: 040	00H.
Recomme	endation	by Boar	d of stud	ies on										
Approval	by Acad	lemic co	uncil on											
Compiled	and des	igned by	/											
Subject h	andled b	y depart	ment					Departn	nent of C	CS & IT				

STATISTICS FOR ALL STATISTICS			SAMRA	T ASH	OK TE	CHNOL(	DGICAL INST	ITUTE			
S. Control of the			(An Aut	(Engine conomot	us Instit	ute Affili	ated to RGPV I	Bhopal)			
VIDISHA M.P.	(		(	DE	PARTN	IENT OI	F CS & IT	<b>F</b> )			
Semester/Yea	r	IV/II		Pro	gram		B.Tec	ch – Interi	net of	Thing	s
Subject Category	DC	Subject Code:	IO	402	Sul Na	bject ame	Databa	ise Manag	emer	nt Syste	em
		Maximum	Marks A	llotted				Conta	ct Ho	ours	Total
FS	 MS	Theory Assignment	Ouiz	FS	Practic I W	al Quiz	_ Total Narks	T	т	р	Credits
60	20	10	10	30	10	10	150	3	0	2	4
		· · ·					•				
Prerequisites:	les of Mo	the set of									
Course Object	tive:	unematics and Program	nming								
• To un	derstand	the different issues inv	volved in	the desig	gn and in	nplement	ation of a databa	se system.			
<ul><li>To re</li><li>To less</li></ul>	present a carn the fu	database system using ndamentals of data mo	ER diagr dels, rela	ams and tional al	l to learn gebra, ai	normaliz	ation techniques	5			
• To ur	nderstand	the basic issues of trar	saction p	rocessin	g and co	ncurrency	y control.				
• To be	come fam	niliar with database sto	orage strue	ctures ar	nd access	s techniqu	les				-
UNITS	Introduc	tion: Durnosa of Da	tabasa Si	Descrip	vious	of data	data modal	a databas		Ŀ	lrs.
T	manager	nent system, three-so	chema ar	chitectu	re of D	BMS, co	mponents of D	BMS. E/I	ž		0
1	Model	- Conceptual data	modeling	g - ma	tivation,	entities	, entity types,	attribute	s		8
	relations	hips, relationship type	es, E/R dia	agram n	otation, e	examples.	1 1	• .			
	distinction	al Model: Relationation	il Data iteority a	Model nd forei	- Conc on keys	relationa	relations, scher algebra operat	na-instanc	e		
II	Introduc	tion, data definition	in SQL	, table,	key ar	nd foreig	n key definitio	ons, updat	e		8
	behavior	rs. Querying in SQL,	notion o	of aggre	gation, a	aggregatio	on functions gro	oup by an	1		
	having c	lauses.	cios and	Norma	1 forms	dapand	lange theory	functions	1		
	depende	ncies, Armstrong's ax	kioms for	r FD's,	closure	of a set	of FD's, minin	nal covers			0
111	definitio algorithr	ns of 1NF, 2NF, 3NF ns for 3NF and BCNF	and BCN normaliz	NF, deco ation, 4	mpositic NF, and	ons and de 5NF.	esirable properti	es of them	,		8
	Transact	ions: Transaction p	rocessing	and H	Error re	covery -	concepts of	transaction	1		
IV	processing recovery	ng, ACID properties, and logging, undo, re	concurre do, undo-	ncy cor -redo log	ntrol, loc gging and	king based	ed protocols for y methods.	CC, erro	r		8
X7	Impleme	entation Techniques:	Data St	orage a	nd Inde	exes - fi	le organizations	s, primary	,		0
v	secondat techniqu	ry index structures, les. multi-level indexe	various s. B+ tree	index :	structure	s - nasr	i-based, dynam	ic nasnin	5		8
Total Hours	qu	,	<i>, 2   100</i>							,	40
Course Outco	omes:										
<b>CO-1</b> : Unders	tand the b	asic concepts, princip	les and ap	plicatio	ns of dat	abase sys	tems.				
CO-2: Discuss	s the composition to the composition of the composi	onents of DBMS, dat	a models,	Relatio	nal mode	els.	an different nor	malforma			
CO-4: Execute	e transacti	on concepts and conc	irrency p	rotocols	unierent	late Detwe		mai torms	•		
CO-5: Articula	ate the bas	sic concept of storage	and acces	s techni	ques.						
Text Book		I S			1						
1. Ramez E	lmasri and	d Shamkant B. Navath	e, Fundar	nentals	of Datab	ase Syste	ms, Pearson Ed	ucation			
2. Silbersch	atz, Korth	n, "Data base System (	Concepts"	, 7th ed	., McGra	w hill.					
Reference Bo	oks	na huatian ta Datahaan	S	, 041 1	D						
1. C. J. Date	e, "An Int amakrishr	roduction to Database	Systems"	, sth ed	., Pearso	n. A System	s McGraw Hill				
2. Ragilu Ra	h and Carl	los Coronel Database	System- ]	Design	Impleme	entation a	nd Management	Cengage	Lear	nino	
List/Links of	e-learning	g resource	~;500m 1					,	Loui		
https:	//nptel.ac.	in/courses/106/104/10	6104135	/							
https://www.endowedia.com/	//nptel.ac.	in/courses/106/106/10	6106220								
The evaluation	n modes o	consist of performance	e in two r	nid sem	ester Te	sts. Ouiz/	Assignments te	erm work	end s	semeste	r practical
examination.						, ~uiZ/					- Fracticui
СО-РО Марр	oing:										

CO	s PO	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> 11	<b>PO</b> 12	PSO1	PSO2	Τ
CO	1 1	1	2										1	2	1
CO	-2 3	2	2										1	2	
CO	3 2	1	2		2								1	2	
CO	-4 2	1	2											2	
CO	-5 2	2	2											1	
Sugg	estive list	of experi	ments:												
1.	Design a	Database	and crea	te requir	ed table	s. For e.	g. Bank,	College	Databas	e					
2.	Apply th	e constrai	nts like P	rimary H	Key , Fo	reign ke	y, NOT	NULL to	the tabl	les					
3.	Write a s	ql stateme	ent for in	plement	ing ALT	TER,UP	DATE ai	nd DELI	ETE						
4.	Write the	queries t	o implen	nent the j	oins										
5.	Write the	query fo	r implem	enting th	ne aggreg	gate fund	ctions								
6.	Write the	query to	impleme	nt the co	ncept of	f Integrit	y constra	aints							
7.	Write the	query to	create th	e views											
8.	Perform	the querie	s with gr	oup by a	nd havii	ng clause	es								
9.	Perform	the follow	ing oper	ation for	demons	trating t	he insert	ion, upo	lation an	d deletio	on using t	he refere	ntial integ	rity	
	constrain	ts													
10.	Write the	query fo	r creating	the user	rs and th	eir role									
Reco	nmendatio	on by Boa	rd of stud	ties on											
Appr	oval by Ac	ademic c	ouncil on												
Com	oiled and d	esigned b	у												
Subje	ct handled	by depar	tment					Depar	tment of	CS & I'	Γ				

ST LHON TECHNOLOGICAL AND	A		SAMRA	AT ASH	OK TE	CHNOL	OGICAL INST	TTUTE			
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and well			(An Aut	onomou	ıs Instit	ute Affili	ated to RGPV	Bhopal)			
VIDISHA M.P.				DE	PARTN	IENT O	F CS & IT				
Semester/Yea	r	IV/II		Pro	gram		B.Te	ch – Inter	net of	Thing	S
Subject Category	DC	Subject Code:	IO	403	Sul Na	bject ame	S	ignals and	l Syst	ems	
		Maximum	Marks A	llotted	<b>D</b> //			Conta	nct Ho	ours	Total
FS		Theory	Ouiz	FS	Practic I W	al Ouiz	Total Marks	T	т	D	Credits
<u> </u>	20	10	<u>Quiz</u> 10	<u> </u>	10	<u></u> 10	150	3	0	2	4
			10	00	10	20		, C	Ū	1 -	-
<b>Prerequisites:</b>	:										
Engineering M	Iathematic	S									
Course Objec	tive:	( 1 C ( 1 C ) 1	1								
<ul> <li>Understand</li> <li>Understand</li> </ul>	the funda	imentals of the Signal	s and syst	tems.	matham	atical mo	delling of the sy	stom			
Apply the	concepts of	of frequency domain re	nresentat	tions to a	malivze (	continuou	us and discrete ti	me signals	/svste	ms	
<ul> <li>Understand</li> </ul>	and apply	v the Z-Transform, to	the analy	sis and c	lescriptio	on of LTI	discrete-time s	vstems.	/ syste	/1115	
Able to app	oly the kno	owledge to model a sy	stem	bib und (	esempti		and the second sec	, sterns.			
UNITS				Descrip	tions					H	lrs.
	An Intro	duction to Signals and	d Systems	s: Defini	ition of s	signal and	d systems, Class	sification of	f		
	signals: c	continuous time and o	liscrete ti	me sign	al, even	and odd,	periodic and no	on-periodio	с,		
	determin	istic and non-detern	ninistic,	energy	and pov	wer. Elei	mentary signals	/Function	5:		
т	exponent	Constantions on signal	lse, unit s	step and	its prop	erties, rai	mp, rectangular,	, triangula	Γ,		0
1	integratic	on time scaling tim	e shiftin	o and	time fo	lding Sy	stem properties	s linearity	, ,		0
	additivel	y and homogeneity, c	ausality, s	stability.	reliabili	ity. Introc	duction to differ	ent types c	f		
	systems	like causal & non o	ausal sys	stems, s	tatic& c	lynamic,	stable &unstab	le, lineard	к.		
	nonlinear	r, time variant &time	invariant	systems							
п	Linear Ti	ime- Invariant System	is: Introdu	uction, C	Convolut	ion: impu	ilse response rep	oresentatio	n		0
11	for LII differenti	systems, properties	of the 1	mpulse	respons	e represe	functions	I systems	5,		8
	The resp	onse of LTI system	to comple	ex expo	nential.	Fourier s	eries(FS) repres	sentation of	f		
III	continuo	us time periodic sign	als, conv	regence	of Four	ier series	s, Properties of	CT-FS, F	S		8
	represent	tation of Discrete Tim	e(DT) pe	riodic Si	gnal, Pr	operties o	of DT-FS.				
	Represen	tation of periodic sig	nals: the	continuo	ous time	Fourier 7	Transform (CT-	FT), FT fo	r		
IV	periodic	signals, Properties of	CT-FT,	the con	volution	property	. Representation	n of DT-F	Г а		0
1V	(lor peri Represen	tation of CT signals	by its sa	, proper	rues of	DI-FI,	a signal from i	ts samples	a		8
	aliasing.	itation of C1 signals	<i>by</i> 105 30	impies, i	ceonstr		a signal from i	ts sample.	,		
	The z tra	ansform Basic princip	ole of z-t	ransform	n, defini	tion, regi	on of converge	nce, syster	n		
V	functions	s, poles and zeros of	systems	and seq	uences,	propertie	s of ROC, prop	erties of z	:-		8
, ,	transform	n, inverse z-transform	using, A	nalysis	and chai	racterizati	ion of LTI syste	em using Z	, 		0
Total Hours	transform	n.									40
Course Outco	mes										+0
CO 1: Acquire	e knowleds	ge of basics, fundame	ntals of si	ignal							
CO 2: Unders	tanding the	e fundamentals for LT	I system.								
CO3: To know	v the conce	ept of Fourier Series.	2								
CO4: To know	w the conce	ept of Fourier Transfo	rm.								
CO5: Apply th	he fundam	entals of Z-Transform	1.								
Text Book &	<u>Ref</u> erence	e Books-								_	
1. T. K. Ray	wat, Signal	ls and Systems, Oxfor	d Univer	sity Pres	s.						
2. A.V. Opp	penheim, A	A.S. Willsky and I.T.	Young, "S	Signals a	nd Syste	ems", Pre	ntice Hall.				
1. B.P. Lath	ni, "Signal	Processing and Linea	r Systems	s", Oxfoi	rd Unive	rsity Pres	SS.				
2. Douglas	K. Lindnei	r, "Introduction to Sig	nals and	Systems	", McGr	aw Hill II	nternational Edit	tion.	~	÷	1 . 1 . 1
3. J. Nagrat	n, S. N. Sh	naran, R. Ranjan, S. K	umar, "Si	ignals ar	nd Syster	ns", Tata	McGraw Hill P	ublishing	Comp	any Lto	a., New
List/Links of	e-learning	z resource									
https:	//archive.n	nptel.ac.in/courses/108	3/104/108	3104100/	/						

## Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester practical examination.

															_
CO-PO I	Mapping	g:													
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> 12	PSO1	PSO2	
CO-1	3	2	1										1	2	1
CO-2	2	2	1	1									1	2	1
CO-3	3	1	2	1									1	2	1
CO-4	3	1	2	1									1	2	
CO-5	3	2	1										1	2	
Suggestiv	ve list of	experin	ients:												
1. Introdu	action to	MATLA	B												
2. Genera	ation of c	ontinuou	is time si	ignals.											
3. Basic o	operation	s on the	signals.												
4. System	ns and the	eir prope	rties.												
5. Convo	lution of	signals.													
6. Transf	ormation	of signa	ls into ti	me and f	frequenc	y domaii	ns.								
Recomme	endation	by Boar	d of stud	ies on											
Approval	by Acad	lemic co	uncil on												
Compiled	and des	igned by	7												
Subject h	andled b	y departi	ment					Departr	nent of C	CS & IT					

BUOL TECHNOLOGICH AND			SAMRA	T ASH	OK TE	CHNOL	OGICAL INSTI	TUTE			
			(An Aut	(Engine onomoi	ering C is Instit	onege), v ute Affili	ated to RGPV B	(hopal)			
UIDISHA M.P.	(			DE	PARTN	MENT OF	F CS & IT	1 /			
Semester/Yea	r	IV/II		Pro	gram		B.Tec	h – Inter	net of	Thing	S
Subject Category	DC	Subject Code:	IO	404	Su N	bject ame	F	oundatio	on of ]	loT	
		Maximum	Marks A	llotted				Cont	act H	ours	Total
FS	] MS	Theory Assignment	Ouiz	FS	Practic	cal Quiz	Total Marks	T	т	P	Credits
<u>60</u>	20	10	<u>Quiz</u> 10	-	-	- Quiz	100	<u> </u>	1	0	4
						•					
Prerequisites:	•										
Course Object	tive:										
To make	students k	know the IoT ecosyste	m.								
To provi	de an und	lerstanding of the tech	nnologies	and the	e standa	rds relatin	g to theInternet	of Thing	5.		
To devel	op skills o	n IoT technical planni	ng.	<u> </u>					-		-
UNITS	Introduc	tion & concepts: det	inition a	Descrip	tions actoristic	cs of IoT	physical desig	m of Io	r	H	lrs.
Ι	Logical	Design of IoT, IoT e	nabling te	echnolog	gies, Io7	Γ levels a	nd development	template	s,		8
	IoT and	M2M, IoT design Met	thodology	·.	5, .		<u> </u>	<b>I</b>	- /		
	IoT Netv	working: Connectivity	Technolo	ogies, G	ateway l	Prefix All	otment, Impact o	of Mobili	у		0
11	on Addr Protocol	essing, Multihoming,	Deviatio	ns from MPP and	I Regula	ur Web, Io	oT identification	and Da	ta		8
	Connect	ivity Technologies: In	troduction	n, IEEE	802.15.4	4, ZigBee,	6LoWPAN, RF	ID, HAR	Т		
111	and Wire	eless HART, NFC, Bl	uetooth, Z	Z-Wave,	ISA 100	0.11A.	· · · · ·	,			8
	Wireless	Sensor Network: Int	roduction	, Compo	onents o	f Sensor l	Node, Modes of	Detection	ı,		
IV	Challeng	ges in WSN. UAV Ne	twork: In	troducti	on, UA	V Networ	k (Feature, Chal	lenges ar	d		8
	Applicat	y) FANET: Introducti	on, FANE omes $-1$	ntroduct	n consic	igin of Si	mart Homes Sn	nart Hon	ie.		
X7	Technolo	ogies. Smart Cities	- Charac	teristics	of Sm	art Cities	, Smart City F	ramewor	k,		0
v	Challeng	ges in Smart Cities.	Connecte	d Vehi	cles – 1	Introduction	on, levels of A	utomatio	n,		8
Total Harris	Vehicle	to Everything(V2X) P	aradigm,	Vehicul	ar Ad-h	oc Networ	rk (VANETs)				40
Course Outco	mes:										+0
CO1: To unde	erstand the	Fundamentals of IoT									
CO2: To know	w about the	e networking concepts	s of IoT.								
CO3: To know	w about th	ne different connectivi	ty technol	ogies.							
CO4: To know	v about the	e WSN and UAV netw	vork.								
CO5: To know	v about the	e various applications	of IoT.								
Text Book											
1. Arshdeep	o Bagha ar	nd Vijay Madisetti, "In	nternet of	Things	– A han	ds-on app	oroach", Orient B	lackswar	Priva	ate Lim	ited - New
Delhi.											
2. Dr. Jeeva	i Jose, Inte	ernet of Things, Khani	na Publish	ing Hou	ise.		<b>N</b> 1 1 1				
3. Nitesh D.	hanjani, A	busing the Internet of	Things, S	Shroff Pu	ublisher/	O'Reilly	Publisher.				
1 Internet	of Things	RMD Sundaram S	hriram K	Vasude	evan A	bhishek S	Nagarajan Johr	ı Wiley a	nd So	ns	
2. Internet of	of Things,	Shriram K Vasudevar	n, Abhishe	ek S Nag	garajan,	RMD Sur	ndaram,John Wil	ey & Sor	is.		
3. Cuno Pfi	ster, "Get	tting Started with the	Internet of	of Thing	gs", Shro	off Publis	her/MakerMedia	•			
4. Francis of	laCosta, '	"Rethinking the Inter	met of T	hings: A	A Scala	ble Appr	oach toConnecti	ng Every	thing	", 1	
St Edition	1, Apress I Banzi N	ruoncations. Aichael Shiloh Make	: Getting	Started	with th	he Arduir	o. Shroff Public	sher/Mak	er Me	dia	
Publisher	<u>S.</u>									514	
List/Links of	e-learning	g resource									
https://www.example.com/	//onlineco	ourses.nptel.ac.in/noc1	9_cs65/pi	review							
The evaluation	n modes o	nu KUDTIC	in two r	nid sem	ester To	ests Ouiz	Assignments to	rm work	end	emeste	r practical
examination.	i moues e	onsist of performance	, m two l	inu seili		sis, QuiZ/		un work,	chu s	Semeste	i practical
CO-PO Mapr	oing:										

COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	2	1	2										1	2
CO-2	2	1	1										1	2
CO-3	2	1	1										1	2
<b>CO-4</b>	2	1	1	1									1	2
CO-5	2	1	1	1									1	2
Recomme	ndation	by Boar	d of stud	ies on										
Approval	by Acad	lemic co	uncil on											
Compiled	and des	igned by	7											
Subject ha	andled b	y departi	ment					Departn	nent of C	CS & IT				

TODIALE MAL			SAMRA (An Aut	AT ASH (Engine onomou DE	OK TE eering C 1s Institu PARTN	CHNOL ollege), V ute Affili 1ENT Ol	OGICAL INST /IDISHA M.P. ated to RGPV F CS & IT	TTUTE Bhopal)						
Semester/Yea	r	IV/II		Pro	gram		B.Te	ch – Intern	et of	Thing	s			
Subject Category	DLC	Subject Code:	ю	406	Sul Na	bject ame	Advar	nced Java I	Prog	ammiı	ng			
		Maximum	Marks A	llotted			1	Conta	of Ha	mrs	Total			
ES		Theory	0	EC	Practic	al Ori-i-	Total	T	<u>т</u>		Credits			
ES	MS	Assignment	Quiz	ES 60	20				<u> </u>	P 4	2			
				00	20	20	100	Ū	0					
Prerequisites:														
Concepts of O	bject Orie	nted Programming an	d core Jav	a										
Course Objec	tive:	inderstand students to	program	ming of	noonta	nd tachn	iques using the	Jour longu	0.00	and pro	arommina			
• To Introd	ent. class	and objects.	program	nning co	incepts a		iques using the	Java langu	age a	and pro	granning			
• To learn	about life	time, scope and the in	itializatio	n mecha	anism of	variables	and improve th	ne ability ge	nera	l proble	em solving			
abilities i	n progran	nming.					Ĩ			1	U			
• Be able to	o use the J	Java SDK environmen	t to create	, debug	and run	simple Ja	ava program							
UNITS	D I.	E		Descrip	tions	1		<b>D'1</b>		H	lrs.			
Basic Java Features - C++ vs JAVA, JAVA virtual machine, Exception Handling, File and I Streams, Visibility, Constructors, Operator and Methods Overloading, Static Members, Inheritance: Polymorphism, Abstract methods and Classes .     6       I Java Collective Frame Work - Generics: Introduction Overloading Generic Methods     6														
1	I       Streams, Visibility, Constructors, Operator and Methods Overloading, Static Members, Inheritance: Polymorphism, Abstract methods and Classes .       6         Java Collective Frame Work - Generics: Introduction, Overloading Generic Methods, Generic Classes, Collections: Interface Collection and Class Collections, Lists, Array List													
	Java Co	ollective Frame Worl	k - Gene	rics: In	troductio	on, Over	loading Generi	c Methods	,					
	Generic	Classes, Collections:	Interface	Collect	ion and	Class Co	ollections, Lists,	Array List	;		0			
11	Inheritance: Polymorphism, Abstract methods and Classes .Java Collective Frame Work - Generics: Introduction, Overloading Generic Methods, Generic Classes, Collections: Interface Collection and Class Collections, Lists, Array ListIIand Iterator, Linked List, Vector. Collections Algorithms: sort, shuffle, reverse, fill, copy, max and min ,binary Search, Stack Class of Package java. Util, Class Priority Queue and													
	Interface	e Oueue, Maps, Proper	ties Class	, Unmo	difiable (	Collection	ns.	Queue and						
	Advance	e Java Features - Mul	tithreadin	g: Mult	ithreadin	ng with C	GUI, Monitors a	nd Monitor	·					
Ш	Locks.	Networking: Manipu	lating UI	RLs, R	eading	a file of	n a Web Ser	ver, Socker	t		8			
	program	ming, Security and	the Netwo	ork, RN	/II, Netw	vorking,	Accessing Data	abases with	L		C C			
	Advance	Java Technologies	- Servlet	: Overv	view and	d Archite	ecture. Handlin	g HTTP &	;					
	HTTPS,	get Requests, JDBC,	Using JI	OBC fro	om a Ser	vlet, Java	a Server Pages	(JSP): First	:					
IV	JSP Exa	ample, JSP elements	, JSP tag	; library	y, Sessio	on tracki	ng, , Java Cr	yptographic	;		10			
	Architec	ture (JCA).												
	Advance	e Web/Internet Progr	amming	(Overvi	ew): Str	uts- Bas	ics of MVC, a	architecture						
V	action c	lass, interceptors, tag	library, v	validatio	ons, Hib	ernate- b	asics, architectu	are, CRUD	,		8			
	Spring- f	framework introduction	on.						_		10			
Total Hours	most									4	40			
<b>COULSE OULCO</b>	mes: syntax an	d semantics of java pr	ogrammir	o langu	age and	basic con	cepts of OOP							
CO2: Write ba	isic Java a	applications and use a	ravs.	.g 1411.gu	uge und									
CO3: Develop	reusable	programs using the co	oncepts of	RMI ar	nd JDBC									
CO4: Apply th	ne concep	ts of Servlet and JSP u	ising adva	nced to	ols.									
CO5: Design e	event driv	en GUI and web relate	ed applica	tions wl	hich min	nic the rea	al word scenario	<b>S</b> .						
Text Book														
1. E. Balaguru	ıswamy, ʻ	Programming In Java	ı"; TMH F	Publicati	ions									
2. The Comp	lete Refer	ence: Herbert Schildt	, TMH											
Reference Boo	oks	VA II	, DITI D											
1. Dener & D	ellel, JA	VA, HOW to Program	; PHI, Pe	arson										
2. Cay Horsun 3. Merlin Hug	nann, Dig vhes et al	· Java Network Progra	mming	Mannin	9 Publics	ations/Pre	entice Hall							
List/Links of	e-learning	g resource		, i i di li	5 I donet									
https://	//archive.i	nptel.ac.in/courses/10	6/105/106	105191	/									
Modes of Eva	luation a	nd Rubric												
The evaluation	n modes c	consist of performance	e in two n	nid sem	ester Te	sts, Quiz	Assignments, t	erm work,	end s	semeste	r practical			
CO.PO Mapp	ing													
	mg.													

CO	s	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO	-1	2	2	2										1	2
CO	-2	2	2	2										1	2
CO	-3	2	1	2	1									1	2
CO	-4	2	1	2	1										2
CO	-5	2	2	1	1									1	2
Sugg	estive	e list of	experin	ients:											
1.	Instal	liation c	DI JDK.	C C	637										
2.	Write	e a prog	ram to sl	now Sco	pe of Va	riables	T A X 7 A								
3.	Write	e a prog	ram to sl	now Con	cept of C	LASS 1	n JAVA								
4.	Write	e a prog	ram to sl	now Typ	e Castin	g 1n JAV	A 11	T A T 7 A							
э. с	write	e a prog	ram to si	now Hov	v Except	ion Han	111ng 18 1	n JAVA							
6. 7	write	e a Prog	ram to s	now Inne	eritance										
/.	Write	e a prog	ram to sl	now Poly	ymorphis	sm :c: (D	11' D	· / D	( ( <b>1</b> )	· • • • • • •					
8.	Write	e a prog	ram to sl	how Acc	ess Spec	ifters (P	ublic, Pr	ivate, Pr	otected)	1n JAVA	1				
9.	Write	e a prog	ram to sl	how use	and Adv	antages	of CONS	STRUCI	IOR						
10.	Write	e a prog	ram to sl	how Inte	rfacing t	etween	two class	ses							
11.	Write	e a prog	ram to A	dd a Cla	iss to a P	ackage									
12.	Write	e a prog	ram to sl	how Life	e Cycle o	f a Threa	ad								
13.	Write	e a prog	ram to d	emonstra	ate AWT	•									
14.	Write	e a prog	ram to H	lide a Cl	ass										
15.	Write	e a Prog	ram to s	how Dat	a Base C	onnectiv	vity Usin	g JAVA							
16.	Write	e a Prog	ram to s	how "HI	ELLO JA	VA " in	Explore	er using A	Applet						
17.	Write	e a Prog	ram to s	how Cor	nectivit	y using J	DBC								
18.	Write	e a prog	ram to d	emonstra	ate multi	threading	g using J	lava.							
19.	Write	e a prog	ram to d	emonstra	ate apple	t life cyc	le.								
20.	Write	e a prog	ram to d	emonstra	ate conce	pt of ser	vlet.								
Reco	mmei	ndation	by Boar	d of stud	ies on										
Appr	oval l	by Acad	lemic co	uncil on											
Com	piled	and des	igned by	7					Duni						
Subje	ect ha	ndled b	y departi	ment					Departr	nent of C	5 & IT				

VICENA WY			SAMRA (An Aut	AT ASH (Engine conomou DE	OK TE cering C 1s Instit PARTN	CHNOLC college), V ute Affilia /IENT OF	OGICAL INST IDISHA M.P. nted to RGPV F CS & IT	ITUTE Bhopal)							
Semester/Yea	ır	IV/II		Pro	gram		B.Tec	h – Inter	net of	Thing	s				
Subject	OE	Subject Code:	OF OF	E 405	Su	bject		Microp	ocesso	or					
Category		Maximum	Marks A	llotted	113	ame		G			Total				
	T	heory	<u> </u>		Practic	al	Total	Cont		ours	Credits				
ES 60	MS 20	Assignment	Quiz	ES	LW	Quiz	Marks			P 0	3				
00	20	10	10	-	•	-	100	5	U	U					
Prerequisites	:														
Digital Electro	onics														
Course Object	ctive:	1	•1•	·	1.4	1.1	• , ,• ,•	C T (	1 .						
• The object	ive of this	course is to become f	amiliar wi	th the $a$	rchitectu	ire and the	e instruction set of	of an Inte	l micro	oproces	sor.				
<ul> <li>Assembly</li> <li>To introdu</li> </ul>	ce 8051 m	icrocontrollers	studied as	well as	the desig	gii or vario	bus types of digi	tai allu al	lalog li	merrace	28.				
UNITS				Descrip	tions					H	lrs.				
	Introduct	tion: Evolution of	micropro	cessor,	archited	ture, inst	ruction, Instru	ction se	ts,						
-	Arithmetic and Logic Instruction, Program control instruction, addressing modes, physicalImemory organization, general bus operation, I/O addressing capability, machine language, assembly language, high level language, programming microprocessor, program execution7														
I	I memory organization, general bus operation, I/O addressing capability, machine language, assembly language, high level language, programming microprocessor, program execution process.														
	I       memory organization, general bus operation, I/O addressing capability, machine language, is assembly language, high level language, programming microprocessor, program execution process.       7         8086 architecture: ALU, Timing and control Unit, Registers, data and Address bus,       8086														
	assembly language, high level language, programming microprocessor, program execution process.         8086 architecture: ALU, Timing and control Unit, Registers, data and Address bus, instructions format addressing modes stack structure interrupts and interrupts service														
П	instructio	ons format, addressir	ng modes	, stack	structur	e, interrup	ots, and interrup	ots servi	ce		7				
	routines;	interrupt cycle, mask	able and	non mas	skable in	iterrupts, i	naximum mode	, minimu	m						
	8086 Pro	ogramming. Machine	level pro	ogram n	nachine	coding of	the program i	nstructio	ns						
III	set, Asse	mbly language progra	umming, a	issemble	r directi	ves operat	tors.		.10		7				
	Periphera	als and interfacing: m	nemory in	terfacin	g, I/O p	orts, I/O p	ports interfacing	, I/O por	ts						
IV	Addressi	ng, PIO 8255, 8253 ii ontrollor DMA trans	nterval tin	ner, 825	9A Prog	rammable	Interrupt Contr	oller, 825	57 or		7				
1 V	technolog	gies for memory, cacl	he memor	v. addre	essing of	the memory	orv. addressing	capacity	of		1				
	the CPU.			j,	8										
	80286/80	)386/80486/Pentium:	salient fe	atures, i	nternal a	architectur	e, addressing m	odes, Da	.ta						
V	types, vi Microcol	rtual mode, numeric	coproces	ssor, MI	MX, MI Instru	MX archit	tecture, MMX ( Interrupts of 80	data type 151 Intel	s,		7				
	Family o	f 8-bit and 16-bit mic	rocontroll	ler.	, msuu	cuon sei,	interrupts of 80	51, mei	. 5						
<b>Total Hours</b>											35				
Course Outco	omes:														
CO-1: Descrit	be architec	ture and instructions,	Different	iate amo	ng diffe	rent progr	amming languag	ge; define	variou	ıs addr	essing				
CO-2: Justify	the differe	ent part (control unit )	registers :	and addr	ess bus)	of micror	processors Write	e and use	differ	ent inst	ructions				
Understand the	e importan	ce of interrupt service	e routine.	und uddi	<b>C</b> 55 0 <b>U</b> 5)	or merop		o una use	uniter		ruetions.				
CO-3: Write a	and use ass	embly level codes to	solve prol	blems											
<b>CO-4:</b> Identify	y the need	of interfacing units an	nd describ	e variou	s interfa	cing chips	5. 41			_					
microprocesso	rs (8020)	veen microprocessor a	and micro	controlle	er and U	nderstand	the advance lea	tures of a	lavance	e					
Text Book															
1. A.K.Ray	K. M. Bh	urchandi, "Advanced	Micropro	cessor a	nd perip	herals" Th	MH								
2. Douglas	V Hall, "N	Aicroprocessors and in	nterfacing	g – Progi	amming	g & Hardw	vare" TMH								
1 Barry B	uks Brev "Th	e intel Microprocesso	r = 8086"	Pearso	n Educa	tion									
2. Kenneth	J.Ayala, "	The 8086 Microproce	ssor: Prog	grammin	ig & Inte	erfacing T	he PC",Cengage	Learnin	g						
3. Krishna	Kant, "Mic	croprocessors and Mic	rocontrol	lers", Pl	HI Learn	ing									
4. R.S. Gao	nkar ,"Mio	croprocessors and inte	erfacing",	TMH											
LISU/LINKS OF	·//archive r	ntel ac in/courses/109	8/103/108	103157	1										
Modes of Eva	luation ar	nd Rubric	5, 105, 100	103137/											
The evaluation	n modes c	onsist of performance	e in two r	nid sem	ester Te	sts, Quiz/	Assignments, te	rm work	, end s	emeste	r practical				

examinati	ion.													
CO-PO N	Mapping	; <b>:</b>												
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	<b>PO</b> <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	2	2	2	1									1	2
CO-2	2	2	2	1									1	2
CO-3	2	2	2	1									2	2
CO-4	2	2	2	1									2	2
CO-5	2	1	1	1									2	2
Recomme	endation	by Boar	d of stud	lies on										
Approval	by Acad	lemic co	uncil on											
Compiled	l and des	igned by	r											
Subject h	andled b	y departi	ment					Departn	nent of C	CS & IT				

Projeka w Spin		SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) DEPARTMENT OF CS & IT										
Semester/Yea	ır	IV/II		Pro	gram		B.Tec	h – Interi	net of	Thing	S	
Subject Category	OE	Subject Code:	(Ol	E 405 E-2B)	Su Na	ame	F	oundatio	n of I	оТ		
		Maximum	Marks A	llotted				Conta	ct Ha	ours	Total	
ES		heory	Ouiz	FS	Practic	al Ouiz	Total Morks	T	т	D	Credits	
<u>ES</u> 60	20	Assignment 10	$\frac{10}{10}  \frac{10}{10}  -  -  -  \frac{100}{10}  \frac{3}{10}  0$								3	
								-	-	Ű		
Prerequisites	:											
NA Course Objective:												
To make students know the IoT ecosystem.												
<ul> <li>To provi</li> </ul>	de an unde	erstanding of the tech	hnologies	and the	standar	ds relatin	g to theInternet	of Things				
To provide an understanding of the technologies and the standards relating to themternet of Things.     To develop skills on IoT technical planning.												
UNITS	IV/II         Program         B.Tech - Internet of Things           ubject         OE         Subject Code:         OF 405         Name         Total           Theory         Practical         Total           Contact Hours         Contact Hours         Total           End         Contact Hours         Total           Total         Contact Hours           Total           Total           Total         Contact Hours           Total           Total            Total											
т	Introduction & concepts: definition and characteristics of IoT, physical design of IoT, Logical Design of IoT, IoT enabling technologies, IoT levels and development templates, IoT and M2M, IoT design Methodology.7											
1	Logical Design of IoT, IoT enabling technologies, IoT levels and development templates,       7         IoT and M2M, IoT design Methodology.       7											
	IoT and M2M, IoT design Methodology.           IoT Networking: Connectivity Technologies, Gateway Prefix Allotment, Impact of Mobility           II         on Addressing Multihoming Deviations from Regular Web. IoT identification and Data											
II       on Addressing, Multihoming, Deviations from Regular Web, IoT identification and Data       7         Protocols(IPv4, IPv6, MQTT, CoAP, XMPP and AMQP)       7									7			
	Protocols	s(IPv4, IPv6, MQTT,	Iltihoming, Deviations from Regular Web, IoT identification and Data       7         6, MQTT, CoAP, XMPP and AMQP)       7         Iologies: Introduction, IEEE 802.15.4, ZigBee, 6LoWPAN, RFID, HART       7         7, NFC, Bluetooth, Z-Wave, ISA 100.11A.       7									
III	Connectivity Technologies: Introduction, IEEE 802.15.4, ZigBee, 6LoWPAN, RFID, HART and Wireless HART, NFC, Bluetooth, Z-Wave, ISA 100.11A.									7		
	Wireless	Sensor Network: Int	roduction	, Compo	onents of	f Sensor 1	Node, Modes of	Detection	,			
IV	Challenge	es in WSN. UAV Ne	etwork: In	troducti	on, UAV	/ Networl	k (Feature, Chal	lenges and	1		7	
	Topology	() FANET: Introducti	on, FANE	ET desig	n consid	eration.	mart Homas Sn	nort Uom				
	Technolo	ogies. Smart Cities	– Charac	teristics	of Sma	art Cities.	. Smart City F	ramework		_		
V	Challenge	es in Smart Cities.	Connecte	ed Vehio	cles – I	ntroductio	on, levels of A	utomation	,		7	
	Vehicle to	o Everything(V2X) P	aradigm,	Vehicul	ar Ad-ho	oc Networ	rk (VANETs)					
Total Hours	mos										35	
CO1: To unde	erstand the	Fundamentals of IoT										
CO2: To know	w about the	e networking concepts	s of IoT.									
CO3: To kno	w about the	e different connectivi	ty technol	logies.								
CO4: To know	w about the	WSN and UAV netw	vork.									
CO5: To know	w about the	various applications	of IoT.									
Text Book												
1. Arshdeep	o Bagha an	d Vijay Madisetti, "I	nternet of	Things	– A han	ds-on app	roach", Orient B	lackswan	Priva	te Lim	ited - New	
Delhi.												
2. Dr. Jeeva	a Jose, Inter	rnet of Things, Khani	na Publish	ing Hou	ise.							
3. Nitesh D	hanjani, Al	busing the Internet of	Things, S	Shroff Pu	ublisher/	O'Reilly	Publisher.					
Reference Bo	oks	DMD Sundaram S	hrirom V	Vocudo	won Al	bishalt S	Nagaraian Joh	wilow or	d So	20		
2. Internet	of Things,	Shriram K Vasudeva	n Abhishe	ek S Nag	araian.	RMD Sun	daram.John Wil	ev & Sons	iu 301 3.	18.		
3. Cuno Pfi	ister, "Gett	ing Started with the	Internet of	of Thing	s", Shro	off Publisl	her/MakerMedia					
4. Francis	daCosta, "	Rethinking the Inter	rnet of T	hings: A	A Scala	ole Appro	oach toConnecti	ing Every	hing'	<b>'</b> , 1		
st Edition	n, Apress P Banzi M	ublications.	Getting 9	Startad .	with the	Arduino	Shroff Dublisher	Makor M	edia	Duhliat	here	
List/Links of	e-learning	resource	Setting 3		viui uie	Aluuno,	Smon rubiisilei	i iviakeľ IV.	cuia	i uuiisi	1015.	
https://	://onlinecou	urses.nptel.ac.in/noc1	9_cs65/pi	review								
Modes of Eva	luation an	d Rubric	•									
The evaluation	n modes co	onsist of performance	e in two r	nid sem	ester Te	sts, Quiz/	Assignments, te	rm work,	end s	emeste	r practical	
examination.	ning											
CO-ro wap	ping:											

COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2	
CO-1	2	1	2										1	2	
CO-2	2	1	1										1	2	
CO-3	2	1	1										1	2	
CO-4	2	1	1	1									1	2	
CO-5	2	1	1	1									1	2	
Recommendation by Board of studies on															
Approval by Academic council on															
Compiled and designed by															
Subject ha	andled b	y departi	ment					Department of CS & IT							

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) DEPARTMENT OF CS & IT												
Semester/	Year	IV/II	Progr		<b>C</b> 1		B.T	<u>is</u>				
Categor	y OE	Subject Code:	(OI	E 405 E-2C)	Su Na	ame	Fou	ckchaiı	n			
	-	Maximum	Marks A	llotted				Con	tact H	ours	Total	
FS	MS	Theory Assignment	Ouiz	Practical				T	Т	P	Credits	
60	20	10	10	-	-		100	3	0	0	3	
		•				•						
Prerequisites:  Resig Knowledge of mathematics												
Course Objective:												
Technology behind blockchain												
<ul> <li>Emerging trends in blockchain .</li> <li>Beal world applications of block chain</li> </ul>												
Real-world applications of block chain     UNITs     Descriptions     Introduction to Plockshein Technology: Pasia ideas behind block shein how it is changing the												
UNITS	Real-world applications of block chain         s       Descriptions       H         Introduction to Blockchain Technology: Basic ideas behind block chain, how it is changing the landscape of digitalization, introduction to cryptographic concepts, Hashing, public key cryptosystems, private vs public block chain and use cases, Hash Puzzles       H         Blockchain Fundamentals: Basic architecture of Blockchain, different terminologies associated, Characteristics of Block chain, Types of networks, Introducing Smart contract concept in Blockchain.       H										Hrs.	
T	Technology behind blockchain         Emerging trends in blockchain .       Descriptions       Hrs.         Introduction to Blockchain Technology: Basic ideas behind block chain, how it is changing the landscape of digitalization, introduction to cryptographic concepts, Hashing, public key cryptosystems, private vs public block chain and use cases, Hash Puzzles       7         Blockchain Fundamentals: Basic architecture of Blockchain, different terminologies associated, Characteristics of Block chain, Types of networks, Introducing Smart contract concept in Blockchain.       7         Components of Blockchain: Core components of Blockchain, Types of Block chains; Blockchain Protocol, Permission & Permission less Block chains, Blockchains, Introduction to Hyperledger, Hyperledger Fabric and its architecture, Hyperledger Composer       7         Emerging Trends in Blockchain: Cloud-based block chain, Multi chain, Geth , Stellar , Ripple, R3 Corda, Blockchain API, Blockchain Sandboxes       7										7	
1	landscape of digitalization, introduction to cryptographic concepts, Hashing, public key       7         cryptosystems, private vs public block chain and use cases, Hash Puzzles       8         Blockchain Fundamentals: Basic architecture of Blockchain, different terminologies       7											
	cryptosystems, private vs public block chain and use cases, Hash Puzzles         Blockchain Fundamentals: Basic architecture of Blockchain, different terminologies associated, Characteristics of Block chain, Types of networks, Introducing Smart contract 7 concept in Blockchain.											
Π	associated,	Characteristics of	Block c	hain, T	Types of	of networ	rks, Introduc	ing Sma	rt con	tract	7	
	concept in Blockchain.         Components of Blockchain: Core components of Blockchain, Types of Block chains;											
III	Components of Blockchain: Core components of Blockchain, Types of Block chains; Blockchain Protocol, Permission & Permission less Block chains,									7		
	Digital Le	dger: Short Histor	ry of M	oney a	nd Tru	st, Bitco	oin Mechanic	es, Intro	duction	n to		
	Ethereum, Introduction to Hyperledger, Hyperledger Fabric and its architecture, Hyperledger         IV         Composer         Emerging Trands in Plackshein: Cloud based black shein. Multi shein: Cath. Staller. Binnlag											
IV									7			
	Emerging R3 Corda	Blockchain API Bl	in: Cloud	-based Sandb	DIOCK C	enain, Mu	liti chain, Gei	n, Stella	ar, Rij	opie,		
	Block Cha	in Use Cases: Supp	lv Chain	Manag	ement	Finance	Health Care	Interne	t of Th	ings		
v	Block Chain Use Cases: Supply Chain Management, Finance, Health Care, Internet of Things           V         (IoT), Remittance, Land Records, Voting and election, Loyalty Programs, Go Green										7	
	(Renewabl	e Energy)						-				
Total Hou	irs										35	
Course O	utcomes:	a hasia concenta n	incinlag o	ndanni	instian	of blog	cabain					
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CO - 2: U	veloin Coro	sommonants of Play	block clia	III, CIIă Turnos d	f Place	le choing	Diock chann.	Protocol				
CO-3: E	apralli Cole	components of Bio	blook ob	in plot	forma	k chanis,	DIOCKCIIaIII I	1010001.				
$CO_{-5}$	nalvsa tha in	portance of block (	block cli	nding t	he solu	tion to th	e real world	aroblama				
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1. Arte	- emis Caro, "I	Blockchain: The Be	ginners C	duide to	Under	standing	the Technolo	gy Behir	nd Bitc	oin &	Crypto	
curre	ency".		e			e						
Reference	Books											
1. Scot	t Marks, "Bl	ockchain for Begin	ners: Gui	de to U	ndersta	nding the	Foundation a	and Basi	cs of tł	ne Rev	olutionary	
Bloc	kchain Tech	nology", Create Spa	ace Indep	endent	Publish	ning Platf	orm.					
2. Mar	k Watney, "I	Blockchain for Begi	nners".									
3. Alw	yn Bishop, "	Blockchain Techno	logy Exp	lained"								
List/Links	s of e-learnin	g resource	C/104/10C	104000	/							
• h Modes of	ups://archive.	npte1.ac.1n/courses/10	0/104/106	104220	/							
The evalu	ation modes of	consist of performance	e in two i	nid sem	ester Te	ests, Quiz	Assignments,	term wor	k, end	semest	er practical	
examination	on.	*									·	
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CO-2	3	1											1	3	
CO-3	3	2											2	1	
CO-4	3	3	2											3	
CO-5	3	3	2										3		
Recommendation by Board of studies on															
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