## GANPAT UNIVERSITY

## FACULTY OF SCIENCE

## **TEACHING AND EXAMINATION SCHEME**

Programme	Bachelor of Scien	Bachelor of Science			Spec.	В	iotechnol	ogy											
Semester	IV																		
Effective fron	n Academic Year	2016-Effective for the batch Admitted in17									July 2015								
Cubicat						Теа	aching so	hem	е					Examination scheme (Marks)					
Subject	Subject Name			Credit					ŀ	Hours (p	ber w	eek)			Theor	Ņ		Practi	cal
Code		L	ectur	e(DT)	Pra	(Lab.)	Le	ecture	e(DT)	Pra	actical	(Lab.)	CE	SEE	Total	CE	SEE	Total	
		L	TU	Total	Р	ΤW	Total	L	TU	Total	Р	TW	Total						
UBTA401CEM	CELLULAR METABOLISM-II	03		03				03		03				40	60	100		100	100
UBTA402FOM	FUNDAMENTALS OF MICROBIOLOGY	03		03				03		03				40	60	100			
UPBA403PRA	PRACTICAL MODULE-IV				03		03				06		06						
UCHA401IPC	INORGANIC AND PHYSICAL CHEMISTRY-V	03		03				03		03				40	60	100			
UCHA402OAC	ORGANIC AND ANALYTICAL CHEMISTRY-VI	03		03				03		03				40	60	100			
UPCA403PRA	PRACTICAL MODULE-IV				03		03				06		06					100	100
UENA401ENG	ENGLISH-IV	02		02				02		02				40	60	100			
	OPEN SUBJECT – 1	02		02				02		02				40	60	100			
	Total	16		16	06		06	16		16	12		12	240	360	600		200	200

GANPAT UNIVERSITY												
					FAC	ULTY	OF SCIEN	ICE				
Progr	amme		Bachel	or of So	cience		Branch/Spec.	Biotechnolog	SY			
Seme	ster		IV				Version	1.0.1.0				
Effect	ive fron	n Acad	demic Ye	ar	2016-17		Effective for	Effective for the batch Admitted in July 20				
Subje	ct code		UBTA	401	Subject N	lame	Cellular Met	abolism –II				
			CEM-I	I								
Teach	ing sch	eme		1			Examination	scheme (Mark	s)	1		
(Per v	veek)	Lectu	ure(DT)	Pract	ical(Lab.)	Total		CE	SEE	Total		
		L	TU	Р	TW							
Credit	t	03		03		06	Theory	30	70	100		
Hours	5	03		06		09	Practical		100	100		
Pre-re	equisite	s:										
Stude	nts sho	uld ha	ve basic	knowl	edge of Me	etabolisr	n of Biomolec	ules of 10+2 lev	vel			
Learn	ing Out	come:										
The co	ourse w	ill help	o the stu	dent to	o understa	nd basic	aspects of cel	lular metabolis	im.			
Theor	y syllab	us										
Unit						C	ontent				Hrs	
1	1.1 A	mino a	acid met	abolisn	n: Oxidatio	on, Trans	samination, De	amination,			15	
	Oxidative decarboxylation and amino acid biosynthesis											
	1.2 U	rea cy	cle			_						
	1.3 Li	ipid m	etabolisi	n.: Lip	id oxidatio	n (Beta	Oxidation)					
2	1.4 Fa	atty ac	1d blosyl	nthesis	4						4.5	
2	2.1 C	atabor	ism of hio	ountho	ues	ostidas o	f puclootidos				15	
	2.20	vidativ	w of blo ve nhosn	boryla	tion: FTC	of mitor	hondria electr	on carriers co	nnleves of FT	C		
	2.3 O	TP oe	neration	couple	d to electro	on fransr	nonuna, ciccu ort	on carriers, con		C		
3	3.1 Pl	notoph	osphorv	lation i	n bacteria.		Joit				15	
0	3.2 Pl	notoph	osphory	lation i	in plants							
	3.3 C	arbohy	drate sy	nthesis	coupled to	o photop	hosphorilation	. C3 cycle.				
	3.4 C	4 cycl	e		_		_	-				
4	4.1 M	lembra	ane trans	port: D	iffusion, A	ctivean	d Passive trans	port			15	
	4.2 In	troduc	ction to s	ignal t	ransduction	n pathwa	iys					
	4.3 T	ypes o	f signali	ng rece	ptors							
	4.4 Si	gnalir	ig pathw	ays: ep	inephrine,	insulin						
Text E	Books											
1	Textbo	ok of	Biochem	istry b	y satyanara	ayan						
Refer	ence Bo	1000	0	· . D.	1	701						
1	Boyer,	1999,	Concept	$\frac{15 \text{ In B1}}{1000 \text{ C}}$	ocnemistry	, I nom	son					
2	Lehnii	iger, l	rinciple	s of B1	ochemistry	/ 						
3	voet L	vonalo	i, Funda	mental	s of Bloche	emistry						
4	Stryer	, В10С	nemistry	• •	1.5.1	1 .	C 1					
5	David	White	e, The Pl	iysiolo	gy and Bic	chemist	ry ot prokaryo	tes				

GANPAT UNIVERSITY											
					FAC	ULTY	OF SCIEN	NCE			
Progra	amme		Bachel	or of So	cience		Branch/Spec.	Biotechnolog	gy		
Semes	ster		IV				Version	1.0.1.0			
Effecti	ive fron	n Aca	demic Ye	ar	2016-17		Effective for	the batch Adm	nitted in	July 2	015
Subjec	ct code		UBTA	402	Subject N	lame	Fundamen	tals of Micro	biology		
			FOM								
Teach	ing sche	eme					Examination	scheme (Mark	(s)		
(Per w	/eek)	Lect	ure(DT)	Pract	ical(Lab.)	Total		CE	SEE	Total	
		L	TU	Р	TW						
Credit		03	-	-	-	03	Theory	30	70	100	
Hours		03	-	-	-	03	Practical	-	100	100	
Pre-re	quisites	5:									
Stude	nts shou	uld ha	ive basic	knowl	edge of nat	ture of N	Aicroorganism	ns of 10+2 leve			
Learni	ing Outo	come									
The co	ourse w	ill hel	p the stu	ident t	o understa	nd vario	us kind of mic	roorganisms a	nd its significar	nce.	
Theory syllabus											-
Unit						C	ontent				Hrs
1	1.1 Ba	acteri	a: Majo	r Chara	cteristics o	f microo	organism. Tax	onomic groups	, General meth	nods of	15
		tying	bacterial	Nome	nclature, Ir		on to Bergey	's manual			
		ingi:	General	charac	Exploring and	a Econo	mic important	ce of fungi.			
	1.3 A	igae a	General	charact	eristics str	ucture a	nd Classificat	ion of Bacterio	nhage Lytic cy	vele and	
	lvsoge	enic c	vcle	entaraet	.01150105, 50	ucture u		ion of Ductorio	phage. Lytte e	yere and	
2	2.1 Ty	pes o	of bacteri	a based	d on Carbo	n, energ	y, electron so	urces and pH, t	emperature and	t	15
	O2 ree	quirer	nent								
	2.2 Cu	ulture	Media a	nd its t	ypes, Meth	ods of is	solation of bac	cteria			
	2.3 Re	eprod	uction in	bacter	ia, Bacteria	l growtl	n curve				
	2.4 M	ethod	s Measu	rement	of microbi	al grow	th				
3	3.11nt	roduc	tion of te	erms: S	sterilization	i, Disinfe	ection, Antise	ptic, Germicide	e, Chemotherap	ру,	15
	Antibi		C.	· Mode	of action	and anni	igntion of Tar	nnoratura Padi	ation and		
	5.2 FL	ion	I Agents	. Mout		and appi		iiperature. Kaul	ation and		
	3.3 Cl	nemic	al Agent	s: Moc	le of action	and app	lication of Ph	enol, alcoholic	and halogen		
	compo	ounds	0					- <b>,</b>			
	3.4 Ĉł	nemic	al Agent	s: Moc	le of action	and app	lication of He	eavy metals and	l Gaseous agen	ts	
4	4.1Int	roduc	tion to te	erms: i	nfection, pa	thogen,	virulence, car	rier, nosocomi	al and opportur	nistic	15
	infect	ions, s	sepsis, se	epticen	nia, septic s	hock, vi	rulence factor	's etc			
	4.2 M	icrobi	ial Patho	genesi	s: Represen	itative di	iseases to be s	tudied in detail	are <b>Bacteria</b> :		
	Chole	ra, ty	phoid, tu	bercul	OSIS, Virus	es: AID	S, Fungi: myc	oses Protozoa:	amoebiasis		
	4.5 U	vervie	w on Or	igin of	Unemothe tibiotics by	rapy	mode of action	n Antifungel &	Antiviral anti	hiotic	
Tevt R	ooks	111010	nes. Cla	55 01 dl	nioiones da			n, Anthungal 8		olotte	
1	Pelczar	·MI	Chan	ECS	and N.R. K	reig (19	93) "Microbi	iology" 5th Edit	ion Tata Mc G	raw Hill	
2	Presso	$\frac{1}{1}$	J Harl	$\frac{1}{2} \frac{1}{2} \frac{1}$	and D A	$\frac{1016}{\text{Klein}}$	(002) "Microl	viology" 5th Edit	ition WCR M	c Graw H	i11
Refere	ence Ro	oks	, 11ul1	-,, ,.1	, with D./ 1, .	(2	<i>vv<sub>2</sub></i> . where	, 5 m Ed			
1	Stanier	RY	Adelbe	erg, E 4	A and LL I	ngram (	(1991) "Gene	ral Microbiolo	gy" 5th Edition	. Printice	
T	Stamer	, к. í	., Adelbe	лg, Е. <i>Г</i>	<b>x</b> . and J.I. I	ngram. (	(1991). Gene		gy, 5th Edition	, rinuce	

	Hall of India Pvt. Ltd., New Delhi.
2	A.S. Rao (1997). "Introduction to Microbiology". Printice-Hall of India Pvt. Ltd., New Delhi.
3	Dubey, R. C. and D. K. Maheshwari (2000). "General Microbiology". S. Chand, New Delhi
4	Experiments in Microbiology. Himalaya Publishing House, Mumbai
5	Gopal Reddy, M., M. N. Reddy, DVR Saigopal and K.V. Mallaiah (2007). "Laboratory
6	H.A.Modi," A Handbook of Elementary Microbiology" (2014), Shanti Prakashan, Ahmedabad

				GA	NPAT	UNIVERSI	ТҮ				
				FAC	CULTY	OF SCIEN	CE				
Programme		Bachel	or of Sc	ience		Branch/Spec.	Biotechno	logy			
Semester		IV				Version	1.0.1.0				
Effective from	n Acad	demic Ye	ar	2016-17		Effective for t	he batch Adn	nitted in	July 2015		
Subject code	ć	UPBA	403	Subject N	Name	PRACTICAL N	IODULE - IV				
		PRA									
Teaching sch	eme				1	Examination s	scheme (Marl	<s)< td=""><td></td></s)<>			
(Per week)	Lectu	ure(DT)	Practi	cal(Lab.)	Total		CE	SEE	Total		
	L	TU	Р	TW							
Credit			03		06	Theory					
Hours			06		08	Practical		100	100		
Pre-requisite	s:										
Students sho	uld ha	ve basic	knowle	edge of Mi	croorgai	nisms and their	nutrition 10+	-2 level.			
Learning Out	come:										
The course w	The course will help the student to understand diversity and nature of Microorganisms.										
Practical con	tent										
					C	ontent					
Introduction	Introduction to culture media, and growth on solid media and in liquid media										
02 Introducti	on to l	solation	technic	ques - Stre	ak plate,	pour plate, spr	ead plate				
03 Standard	plate c	ount tecl	hnique								
04 Isolation of	of Yea	st and M	lolds								
05 Study the	effect	of Envir	onmen	t on growt	h –Temp	perature,					
06 Study the	effect	of Envir	onmen	t on growt	h – pH,						
07 Study the	effect	of Chen	ncals o	n microbia	l growth	1.					
08 Study the	effect	of Heav	y meta	on microt	oial grov	vth.					
10 Study the	enect Diacha	OI AIUI	ololics								
To Study of I	bohyd	mical le	st : cor for	montotion	MDVI	Citroto utiliza	tion TOL OF	oroh			
Test for Nite	ogen	rate. Su substrat	gai ieii	1 H2S Ur	IVI-IX, VI	, Chiate utiliza	10011, $131$ , $31$				
Growth on s	necifi	c media	EMB	Mac Conl	kv <sup>.</sup> " agai	r Catalase test		ι,			
11 Study of r	bure cu	ulture: E.	coli. B	acillus. Pr	oteus vu	lgar, staphyloc	occus, cocci.				
12 Isolation	of Bac	teriopha	ge			igai, stapiljiot					
Lipid estimat	ion	·····	5-								
14 Amino ac	id esti	mation									
15 Quantifica	ation o	f DNA									
16 Urea estin	nation	by DAN	1								
17 Genetic pr	roblen	ns based	on Mer	ndelian gei	netics.						
Text Books											
1 Practic	al Bio	chemistr	y, Jayra	aman							
Reference Bo	ooks										

GANPAT UNIVERSITY																			
						FAC	CULTY	OF SCIEN	CE										
Progra	amme		Bachel	or of S	CIENCE	E		Branch/Spec.	Biotechnolog	3y									
Semes	ster		IV					Version	1.0.0.0										
Effecti	ive froi	m Acad	lemic Ye	ar	20	16-17	7	Effective for	the batch Adn	nitted in	July 2	015							
Subjec	ct code	e	UCHA 4	101 IPC	C Sul	bject	Name	Inorganic an	d Physical Che	mistry-V									
Teach	ing sch	eme						Examination	scheme (Marl	(s)									
(Per w	veek)	Lectu	ire(DT)	Pract	ical(La	ab.)	Total		CE	SEE	Total								
		L	TU	Р	TV	N													
Credit		3						Theory											
Hours		3						Practical											
Pre-re	quisite	es:																	
•	Befo com	re stue pounds	dying in 5, mole	organi cular	c and structu	phys ure,	sical che Molecul	emistry all stu lar orbital th	udents have b eories, basics	asic knowledg of physical	ge of inor chemistry	rganic / and							
knowledge related to UG level chemistry.																			
Learning Outcome:																			
Applications and limitations of crystal field theory.																			
•	Und	erstand	ling of n	nagnet	ic prop	pertie	es of co-	ordination cor	mplexes.										
•	Knov	wledge	of boro	n chen	nistry.														
•	Und	erstand	ling of io	onic eq	Juilibriu	um.													
•	Knov	vledge	of cond	uctom	etric ti	itratio	ons.												
•	Basio	c conce	pt of ele	ectroch	nemist	try an	d relate	d theories.											
Theor	y syllat	ous							Theory syllabus										
llnit																			
Unit							C	ontent				Hrs							
	Appli	ication	of CFT				c	ontent				Hrs							
	Appli	i <b>cation</b> Applic	of CFT ation of	C.F.T.			С	ontent				Hrs							
1	Appli	i <b>cation</b> Applic 2(	of CFT cation of 015.	C.F.T. For	detern	ninat	c ion of c	ontent olor of comple	ex., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli	ication Applic 20 Limita	of CFT cation of 015.	C.F.T. For C.F.T.	detern	minat	ion of c	ontent olor of comple	ex., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1	Applic 2( Limita Isome	of CFT cation of 015. ation of ( erism in	C.F.T. For C.F.T. comple	detern	minat	ion of c	ontent olor of comple	x., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1 Mag	Applic 20 Limita Isome	of CFT cation of 015. ation of ( crism in o ropertie	C.F.T. For C.F.T. comple s of Co	detern exes. <b>5-Ordir</b>	minat natio	ion of connected of the	ontent olor of comple ound	ex., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1 Magi	Applic 20 Limita Isome <b>netic Pi</b> Type o	of CFT cation of 015. Ition of ( crism in o ropertie of magn	C.F.T. For C.F.T. comple s of Cc etic be	detern exes. <b>Ordir</b> havior	minat natio r	C ion of con n Comp	ontent olor of comple ound	x., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli	Applic 20 Limita Isome <b>netic Pr</b> Type of Metho	of CFT cation of 015. Ition of ( crism in of ropertie of magn od of de	C.F.T. For C.F.T. comple s of Cc etic be termir	detern exes. <b>D-Ordir</b> shavior	minat natio r agnet	ion of connection of connection of connection of connection of the second secon	ontent olor of comple ound eptibility	ex., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1 Magi 1.2	Applic 20 Limita Isome <b>netic P</b> r Type o Metho Spin c	of CFT cation of 015. Ition of ( crism in of copertie of magn od of de only form	C.F.T. For C.F.T. comple s of Co etic be termir nula.	detern exes. <b>-Ordir</b> havior hing ma	minat natio r agnet	ion of contract of the suscent of th	ontent olor of comple ound eptibility	x., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1 Magi 1.2	Applic 20 20 20 20 20 20 20 20 20 20 20 20 20	of CFT cation of 015. ation of 0 rism in 0 ropertie of magn od of de only forn etic pro	C.F.T. For C.F.T. comple s of Cc etic be termir nula. perties	detern exes. <b>p-Ordir</b> shavior hing ma	minat natio r agnet	ion of con n Comp tic susce tal comp	ontent olor of comple ound eptibility olexes.	x., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1 Magu 1.2 Boro	ication Applic 20 Limita Isome netic Pr Type o Metho Spin o Magn n Hydr	of CFT cation of 0 D15. Ition of 0 erism in 0 of opertie of magn od of de only form etic pro ide	C.F.T. For C.F.T. comple s of Cc etic be termir nula. perties	detern exes. <b>D-Ordir</b> shavior hing ma	minat natio r agnet	C ion of co n Comp tic susce tal comp	ontent olor of comple ound eptibility olexes.	ex., 2. Use of C	.F.S.E. value.		Hrs							
1	Appli 1.1 Magi 1.2 Boro	ication Applic 2( Limita Isome Type o Metho Spin o Magn n Hydr Introc	of CFT cation of 0 015. Ition of 0 ropertie of magn od of de only form etic pro ide luction.	C.F.T. For C.F.T. comple s of Co etic be termir nula. perties	detern exes. <b>-Ordir</b> havior hing ma s for 3 <sup>rc</sup>	minat natio r agnet	ion of con n Comp tic susce tal comp	ontent olor of comple ound eptibility olexes.	x., 2. Use of C	.F.S.E. value.		Hrs							
02	Appli 1.1 Magi 1.2 Boro	ication Applic 20 Limita Isome netic Pr Type o Metho Spin o Magn n Hydr Introc Classi Prepa	of CFT cation of 015. tion of 0 rism in o ropertie of magn od of de only forn etic pro ide luction. fication	C.F.T. For C.F.T. comple s of Cc etic be termir nula. perties	detern exes. <b>p-Ordir</b> havior ning ma s for 3 <sup>rc</sup> rides.	minat natio r agnet <sup>rd</sup> met	ion of con n Comp tic susce tal comp	ontent olor of comple ound eptibility olexes.	ex., 2. Use of C	.F.S.E. value.		Hrs							
02	Appli 1.1 Magu 1.2 Boro	ication Applic 20 Limita Isome Type o Metho Spin o Magn n Hydr Introc Classi Prepa Bridge	of CFT cation of 0 015. tion of 0 erism in 0 of magn od of de only form etic pro ide luction. fication, F o bondir	C.F.T. For C.F.T. comple s of Co etic be termir hula. perties of Hyd Proper	detern exes. <b>D-Ordir</b> havior hing ma 5 for 3 <sup>rd</sup> rides. ties str	minat natio r agnet r <sup>d</sup> met	ion of con n Comp tic susce tal comp re and u	ontent olor of comple ound eptibility olexes.	e.	.F.S.E. value.		Hrs							
02	Appli 1.1 Magu 1.2 Boro	ication Applic 20 Limita Isome Type of Metho Spin of Magn n Hydr Introc Classi Prepa Bridge Struct	of CFT cation of 0 215. tion of 0 rism in 0 ropertie of magn od of de only forn etic prop ide luction. fication ration, F e bondir	C.F.T. For C.F.T. comple s of Cc etic be termir nula. perties of Hyd Proper ig in B gigher f	detern exes. p-Ordir havior ing ma s for 3 <sup>rc</sup> for 3 <sup>rc</sup> ties str H <sub>6</sub> (M.	minat natio r agnet r <sup>d</sup> met ructu .O. ar es: B	C ion of co n Comp tic susce tal comp re and u nd SP <sup>3</sup> a	ontent olor of comple ound eptibility olexes. use of Diboron pproach.).	e.	.F.S.E. value.		Hrs							
02	Appli 1.1 Magr 1.2 Boro	ication Applic 20 Limita Isome <b>netic Pi</b> Type o Metho Spin o Magn <b>n Hydr</b> Introc Classi Prepa Bridge Struct <b>Equilit</b>	of CFT cation of 0 D15. Ition of 0 erism in 0 of magn od of de only form etic pro ide luction. fication ration, F e bondir cure of h	C.F.T. For C.F.T. comple s of Cc etic be termir nula. perties of Hyd Proper igher I	detern exes. <b>p-Ordir</b> havior hing ma s for 3 <sup>rd</sup> for 3 <sup>rd</sup> rides. ties str ties str the (M. Borone	minat natio r agnet r <sup>rd</sup> met ructu .O. ar es: B	C ion of con n Comp tic susce tal comp re and u nd SP <sup>3</sup> a 4H <sub>10</sub> , B <sub>5</sub>	ontent olor of comple ound eptibility olexes. use of Diboron pproach.). H <sub>9</sub> , B <sub>5</sub> H <sub>11</sub> , B <sub>6</sub> H	e. 10 & B <sub>10</sub> H <sub>14</sub>	.F.S.E. value.		Hrs							
02	Appli 1.1 Magi 1.2 Boro Ionic	ication Applic 20 Limita Isome Type o Metho Spin c Magn n Hydr Introc Classi Prepa Bridge Struct Equilik	of CFT cation of 0 215. ation of 0 rism in 0 ropertie of magn od of de only forn etic prop ide luction. fication ration, F e bondir cure of h prium	C.F.T. For C.F.T. comple s of Cc etic be termir nula. perties of Hyd Proper ig in B <sub>2</sub> igher I	detern exes. - <b>Ordir</b> havior ing ma 5 for 3 <sup>rc</sup> frides. ties str H <sub>6</sub> (M. Borone	minat natio r agnet rd met ructu .O. ar es: B,	ion of comp tic susce tal comp re and u nd SP <sup>3</sup> a 4H <sub>10</sub> , B <sub>5</sub>	ontent olor of comple ound eptibility olexes. use of Diboron pproach.). H <sub>9</sub> , B <sub>5</sub> H <sub>11</sub> , B <sub>6</sub> H	e.	.F.S.E. value.		Hrs							
02	Appli 1.1 Magr 1.2 Boro Ionic	ication Applic 20 Limita Isome Type o Metho Spin c Magn n Hydr Introc Classi Prepa Bridge Struct Equilit Only I Electr	of CFT cation of 0 215. tion of 0 rism in o ropertie of magn od of de only forn etic proj ide luction. fication ration, F e bondir cure of h prium ntroduc olysis. F	C.F.T. For C.F.T. comple s of Cc etic be termin nula. perties of Hyd Proper ag in B <sub>2</sub> igher I tion. onic E	detern exes. <b>p-Ordir</b> havior ing ma for 3 <sup>rc</sup> for 3 <sup>rc</sup> for 3 <sup>rc</sup> for 3 <sup>rc</sup> (rides. ties str H <sub>6</sub> (M. Borone	minat natio r agnet rd met .0. ar es: B, rium.	ion of contract $n$ Comp tic suscent tal comp re and u nd SP <sup>3</sup> a ${}_{4}H_{10}$ , B <sub>5</sub> Resista	ontent olor of comple ound eptibility olexes. use of Diboron pproach.). $H_9$ , $B_5H_{11}$ , $B_6H$ unce, Conduct	e. 10 & B <sub>10</sub> H <sub>14</sub>	conductance.		Hrs							
02	Appli 1.1 Magı 1.2 Boro Ionic	ication Applic 2( Limita Isome Type o Metho Spin c Magn n Hydr Introc Classi Prepa Bridge Struct Equilit Only I Electr Equiva	of CFT cation of 0 015. Ition of 0 orism in 0 of magn od of de only form etic pro ide luction. fication ration, F e bondir cure of h orium ntroduc olysis, L alent Co	C.F.T. For C.F.T. comple s of Co etic be termir nula. perties of Hyd Proper ig in B <sub>2</sub> igher I tion. onic E onduct	detern exes. <b>-Ordir</b> havior ing ma 5 for 3 <sup>rd</sup> frides. ties str H <sub>6</sub> (M. Borone quilibr ance,	ninat natio r agnet rd met ructu .O. ar es: B, rium, Mola	ion of comp ion of comp tic susces tal comp re and u nd SP <sup>3</sup> a $_{4}H_{10}$ , B <sub>5</sub> Resista ar Cond	ontent olor of comple ound eptibility olexes. use of Diboron pproach.). $H_9$ , $B_5H_{11}$ , $B_6H$ unce, Conduct uctance, Equi	e. 10 & B <sub>10</sub> H <sub>14</sub> ance, Specific valent conduc	conductance,	ite	Hrs							

	Type of Conductrometric Titration										
	Acid-Base Titration										
	1. Strong Acid Vs Strong Base.										
	2. Strong Acid Vs Weak Base.										
	3. Weak Acid Vs Strong Base.										
	4. Weak Acid Vs Weak Base.										
	5. Strong Acid + Weak Acid Vs Strong Base.										
	Hydrolysis of Salt										
	Classification of Salt.										
	1. Strong Acid & Strong Base.										
	2. Strong Acid & Weak Base.										
	3. Weak Acid & Strong Base.										
	4. Weak Acid & Weak Base.										
	Numerical.										
	Electro Chemistry										
	Introduction of terms.										
	Oxidation, Reduction, Redox, Anode, Cathode, Electrode, Half Cell, Oxidation and										
	Reduction Potential.										
	Electochemical cell (Galvenic cell) & Representation cell.										
	Electrochemical series and its significance.										
04	Nearst equation of cell EMF and single electrode potential.										
04	Describe the Electrode.										
	1. Metal-Metal ion Electrode., 2., Standard Hydrogen Electrode.										
	3. Calomel Electrode., 4. Weston standard Electrode.										
	5. Glass Electrode., 6. Quienhydrogen Electrode.										
	Application of cell potential.										
	2015. Equilibrium constant. 2. Free energy. 3. pH										
	Numerical.										
Pract	cal content										
Text I	Books										
1	Advance Inorganic chemistry, by Satya Prakash, G.D. Tuli, S. K. Basu, R.D. Madan and S.Chand Vol-II.										
2	Physical Chemistry (question and answer) by R. N. Madan, G.D. Tully and S. Chand.										
Refer	ence Books										
1	Advance physical chemistry by Gurdeep Raj.										
2	Principal of Physical Chemistry by Puri, Sharma and Pathania.										
3	Chemical Thermodynamics by R.P. Rastogy and R.R. Mishra.										
4	Essential of Physical Chemistry by B.S. Bahal, Arn Bahal and G.D. Tully.										
5	Physical chemistry by P.W. Atkins, 5 <sup>th</sup> ed., Oxferd, 1994, 7 <sup>th</sup> ed., 2002.										
6	Physical chemistry by R.A. Alberty and R.J. Silbey, John Wiley, 1995.										
7	Physical chemistry by G.H. Barrow, 5 <sup>th</sup> ed., Mac Graw Hill,1998, 6 <sup>th</sup> ed.										
8	Physical chemistry by W.J.Moore, 4 <sup>th</sup> ed., Orient Longmans, 1969.										

					GA	NPAT l	JNIVERSI	ТҮ			
					FAG	CULTY	OF SCIEN	CE			
Progra	amme		Bachel	or of S	CIENCE		Branch/Spec	CHEMISTRY			
Semes	ster		IV				Version	1.0.1.0			
Effecti	ive fror	n Acad	demic Ye	ar	2016-	17	Effective fo	r the batch Ad	mitted in	July 2	.015
Subjec	ct code	5	UCHA 4	102 OA	C Subje	ct Name	Organic and	d Analytical Ch	emistry-IV		
Teachi	ing sch	eme	()			1	Examination	n scheme (Ma	rks)		
(Per w	veek)	Lectu	ure(DT)	Pract	ical(Lab.)	Total		CE	SEE	Total	
Cuadit			10	Р	IW		Theory				
Credit		3					Ineory				
Hours	quicito	3					Practical				
•	Befo com volui	re stu pound metric	dying o s, gener analysis	rganic al orga and ki	and analy anic chem nowledge r	vtical che stry, carb elated to	mistry all st oohydrates, h UG level chei	udents have neterocyclic co mistry.	basic knowled ompounds, UV	dge of o spectro	rganic scopy,
Learni	Ing Out	oducti	on of he	terocy	clic compo	unds and	their nomen	clature			
	Cher	nistry	of five m	ember	ed hetero	velic com	nounds	ciature.			
•	Knov	vledge	of carbo	hvdra	te chemist	ry and var	rious carbohy	drate compou	nds		
•	Unde	erstand	ding of n	olvnuc	lear aroma	atic hydro	carbons and t	their chemistry	/.		
•	Nom	enclat	ure and	physic	al properti	es of cyclo	palkanes.		,.		
•	Unde	erstand	ding of v	arious	theories o	f strain in	cycloalkanes.				
•	Unde	erstand	ding the	Basics	of UV-Vis	spectrosco	, yqc.				
•	Unde	erstand	ding of p	recipit	ation and o	complexoi	metric titratio	ons.			
Theory	y syllat	ous									
Unit						Со	ntent				Hrs
	1.1	Heter	ocyclic (	Compo	und						
1		Introd Nome Mole Thiop Meth Chem Basici	duction. enclature cular or hene. od of syn ical reac ty of Pyn	e. bital p nthesis ctions f rrole.	icture and for Pyrrol or Pyrrole,	aromatio e, Furan a Furan an	c characteris nd Thiophene d Thiophene.	tics of Pyrrole e.	e, Furan and		-
_	1.2	Carbo	ohydrad	es							
		Introd Defin Classi Nome React (Meth With	duction. ition. fication enclature ions of C nylation, HCN, NH	of Mor e. Glucose Acety I <sub>2</sub> OH, C	no Sachario e and Fruct ation, Oxio Dsazone fo	des. ose. lation wit rmation a	h Br₂ water a nd Epimerisa	nd con. HNO <sub>3</sub> , tion.)	Reaction		
		Polyn	uclear A	romat	ic Hydroca	rbons					
02	2.1	Nome Synth	enclature esis of N	e of Na Iaphth	phthalene alene & Ar	& Anthra thracene	cene derivati by Haworth S	ves. Synthesis.			

		Reaction of Naphthalene & Anthracene	
		1. Oxidation	
		2. Reduction	
		3. Dehydrogenation	
		4. Nitration	
		5. Halogenation	
		6. Sulphonation	
		7. Friedal-Craft Reaction	
		<ul> <li>Orientation of electrophillic substitution in Naphthalene.</li> </ul>	
		• Synthesis of alpha $-\alpha$ and $-\beta$ substituted Naphthalene derivatives (By Howath	
		Synthesis only)	
		<ul> <li>Synthesis of 9- &amp; 9.10- substituted Anthracene derivatives (by howath</li> </ul>	
		Synthesis only)	
		Cyclo Alkane	
		Nomenclature	
		Physical property	
		Method of preparation	
	22	Chemical properties of cyclo alkanes	
	2.2	Bayer's Strain theory	
		Orbital nicture of angle strain	
		Heats of compustion and relative stabilities of Ovelealkane	
		Straiplass ring theory	
	Liltera	Strainless ring theory.	
	Ultra		
		Types of electronic transitions.	
		Effect of conjugation.	
03		Concept of Chromophore and Auxochrome.	
		Bathochromic, Hypsochromic, Hyperchromic and Hypochromic shifts.	
		Woodward-fisher rules.	
		Problems of conjugated enes, enones and aromatic ketones, aldehydes, acids and	
		esters using empirical rules.	
		Theory of Precipation	
		Precipitation Titration,	
	4.1	The Moh'r method,	
		Fajan's method,	
		Volhard's method,	
04		Construction of precipitation titration curve.	
		Complex Metric EDTA Titration	
		Туре,	
	4.2	Indicator,	
		Masking and demasking.	
		Construction of the titration curves.	
Practi	cal cor	itent	
Text B	ooks		
1	Organ	ic Chemistry by Morrision and Boyd. 4 <sup>th</sup> ed., Pearson Education-2003	
2	Text b	ook of Organic Chemistry by Arun Bahal, B.S. Bahl, S.Chand.	
Refere	ence B	ooks	

1	Advance Organic Chemistry by Jerry March.
2	Advance Organic Chemistry by Arun Bahal and B. S. Bahal.
3	Organic Chemistry Vol. I & II by S.M. Mukherjee, S.P. Singh, R. P. Kapoor.
4	Reaction Mechanism and Reagent in Organic Chemistry by Gurdeep R. Chatwal 4 <sup>th</sup> ed., Himalaya pub.
5	Organic Chemistry by Pine, Hendriction, Cram and Hammond 4 ed. By P. S. Kalsi.
6	Spectroscopy of Organic compounds 6 <sup>th</sup> ed., by P.S. kalsi.
7	Organic Chemistry by I.R. Finar.
8	Organic Spectroscopy by William and Kemp.
9	Spectroscopic methods in organic chemistry by Dudley H. Williams and lan Fleming.
10	Analytical chemistry by G.D. Christian, J.wiley.
11	Fundamental of Analytical Chemistry by D. A. Skoog.
12	Analytical Chemistry- principals by J.H. Kennedy.
13	Analytical Chemistry principals and techniques by L.G. Hargis.
14	Principles of Instrumental Analysis by D.A. Skoogs.
15	Qualitative Analysis by R. A. Day.

				GA		UNIVERSI	ТҮ		
				FA	CULTY	OF SCIEN	CE		
Programme		Bachel	or of SC	ENCE		Branch/Spec	CHEMISTRY		
Semester		IV				Version	1.0.1.0		
Effective from	n Acad	demic Ye	ar	2016-	17	Effective fo	r the batch Ac	lmitted in	July 2015
Subject code	é	UPCA 4	03 PRA	Subje	ct Name	Practical M	odule : IV		
Teaching sch	eme					Examinatio	n scheme (Ma	irks)	-1
(Per week)	Lectu	ure(DT)	Practio	al(Lab.)	Total		CE	SEE	Total
	L	TU	Р	TW					
Credit	2					Theory			
Hours	2					Practical			
Pre-requisite	s:								
Before     & org     organ	re per ganic ( nic est	compour imations	nds and ands and	their pro	operties, t	heories relate	ed to volumet used in perfor	ric analysis, c ming chemist	hromatography, try practicals.
	tome:	analysis	of mixt	uros of in	orgonicia				
Qual	motric	analysis	of mixi	dotormir	organic ic	uns. Various motal	c		
• Volui	netric	of organ	ic com			anous metai:	5.		
Estill	ration	of radio		non or cl	various i	nethous.			
Sepa		orrauic		, paper ci	Iromatog	гарпу.			
Fractical Sylic	1005				Inorgani	c Chemistry			
Inorganic Qu	alitativ	ve analys	sis (Any	7 mixture	e out of 10	))			
Mixture cont	aining	4 Redica	als.						
(Except PO <sub>4</sub> <sup>-3</sup>	, BO <sub>3</sub> -3	, ASO <sub>4</sub> -3,	$ASO_{3}^{-3}$ ,	0 <sup>-2</sup> ).					
					Analytica	al Chemistry			
A. Volumetri	ic Anal	lysis of C	u, Zn, N	i (Any Th	ree)				
1.	To det	ermine t	he amo	unt of Zn	by EDTA	method.			
2.	lo det	ermine t	he amo	unt of Ni	by EDIA r	nethod.			
3.	To det	ermine t ormino t	ne amo	unt of Cu		netry method			
4. B Estimation			Anilino			methou.			
D. Estimation 1	To det	ermine t	he amo	unt of An	iline hv hi	rominating m	ethod		
2.	To det	ermine t	he amo	unt of Ph	enol by bi	rominating m	ethod.		
3. 1	To det	ermine t	he amo	unt of Glu	ucose by C	Dxidation met	thod.		
C. Paper Chr	omato	graphy	1 <sup>st</sup> & 3 <sup>rd</sup>	Group R	, adicals.				
Practical con	tent								
Text Books									
1									
Reference Bo	ooks								
1									
2									

						GA		JNIVERS	ΤΥ			
						FAC	CULTY	OF SCIEN	CE			
Progr	amme		Bachel	or of S	CIEN	CE		Branch/Spec	Biotechnolog	ξγ.		
Seme	ester		IV					Version	1.0.1.0			
Effec	tive from	n Acad	demic Ye	ar		2016-2	17	Effective fo	r the batch Ad	mitted in	July 2	015
Subje	ect code		UENA 4	101 EN	G	Subjec	t Name	English IV				
Teacl	ning sche	eme					T	Examinatio	n scheme (Ma	rks)	- [	
(Per v	week)	Lectu	ire(DT)	Pract	ical(	Lab.)	Total		CE	SEE	Total	
		L	TU	Р	-	TW						
Credi	t	2						Theory				
Hour	s	2						Practical				
Pre-r	equisites	5:										
Learr	Stude Stude Stude	ents sh ents sh come:	nould ha	ve abil famili	ity to ar w	o speal ith cor	k and writ rect usage	e of language	itences in their	r day to day la	anguage.	
•	Knowledge of English grammar.											
•	<ul> <li>Understanding of prose and composition.</li> </ul>											
•	Devel	lopme	ent of co	mmun	icati	on skill	ls.					
•	Devel	lopme	ent of vo	cabula	ry.							
•	Know	ledge	of lette	r writir	ng fo	or vario	us officia	purposes.				
Theo	ry syllab	us										1
Unit							Co	ntent				Hrs
1	Select	ed Pro	ose									
	How n	nuch	land doe	es a ma	n ne	eed- Le	o Tolstoy					
	The M	lother	- Somer	set Ma	lugh	am						
	A true	story	/- Mark T	wain								
2	Basic I	Englis	h Gramn	nar								
	Adver	b clau	ise, Adje	ctive c	laus	е						
3	Note-	makin	ig and Pr	écis w	ritin	g						
	Unsee	en par	agraphs	for No	te-n	naking						
<u> </u>	Unsee	en par	agraphs	for pre	ecis							
4	Composition											
Memo Writing, Notice, Agenda and Minutes Writing, Complaint Letters, Adjustment Letters												
	Comp Memo	ositio Writ	ing, Not	ice, Ag	enda	a and N	/linutes W	/riting, Comp	laint Letters, A	Adjustment Le	etters	
Pract	Comp Memo ical cont	ositio Writ ent	ing, Not	ice, Ag	enda	a and N	/linutes W	/riting, Comp	laint Letters, A	Adjustment Le	etters	
Pract	Comp Memo ical cont	o Writ ent	ing, Noti	ice, Ag	enda	a and N	/linutes W	/riting, Comp	laint Letters, A	Adjustment Le	etters	
Pract Text	Comp Memo ical cont Books		ing, Not	ice, Ag	enda	a and N	Ainutes W	/riting, Comp	laint Letters, A	Adjustment Le	etters	
Pract Text	Comp Memo ical cont Books Twelve	ositio o Writ ent selec	ted shor	ice, Ag t storie	enda es by	a and N / C. S. S	Sharma	Aspi Doctor	laint Letters, A	Adjustment Le	etters	
Pract Text 1 2 Refer	Comp Memo ical cont Books Twelve Busines	selec	ted shor	ice, Ag t storie tion by	enda es by / Roo	a and N / C. S. S dha Do	Sharma	Aspi Doctor	laint Letters, A	Adjustment Le	etters	
Pract Text 1 2 Refer	Comp Memo ical cont Books Twelve Busines ence Bo	ositio o Writ ent selec ss Con oks	ted shor	t storie tion by	enda es by / Ro	a and N / C. S. S dha Do mila Ba	Ainutes W Gharma octor and s	Aspi Doctor	laint Letters, A	Adjustment Le	etters	
Pract Text 1 2 Refer 1 2	Comp Memo ical cont Books Twelve Busines rence Bo Busines High-Sc	ositio o Writ ent selec ss Con oks ss Con	ted shor nmunica nmunica	t storie tion by tion by	enda es by / Roo / Urn	y C. S. S dha Do mila Ra	Ainutes M Sharma octor and A ii and S. M	Aspi Doctor 1. Rai	laint Letters, A	Adjustment Le	etters	

	GANPAT UNIVERSITY												
FACULTY OF SCIENCE													
Programme			Bachelor of SCIENCE					Branch/Spec	CHEMISTRY/BIOTECHNOLOGY/MICRO LOGY/PHYSICS/MATHEMATICS			OBIO	
Semes	ster	IV					Version	1.0.0.0					
Effecti	ve fror	n Acad	demic Year			2016-17		Effective for the batch Admitted in July 2			July 2	015	
Subject code			UDMB 401			Subject Name		DISASTER MANAGEMENT –II					
			DMT										
Teachi	ing sch	()			(, , ) <u> </u>		Examination scheme (Marks)						
(Per week) Lect		Lectu	ure(DT)	DT) Practic		(Lab.)	Total		CE	SEE	Total		
<b>0</b> 111		L	TU	P		TW	2		10	60	4.0.0		
Credit 2		2	-	0	-		2	Theory	40	60	100		
Hours 2		2	-	0			2	Practical	00	00	00		
Pre-requisites:													
Students should have advance knowledge of different disasters.													
<ul> <li>Students should have ability to think over the serious issues in the society.</li> <li>Students should be familiar with the preventive rest to de of disectors.</li> </ul>													
Students should be familiar with the preventive methods of disasters.													
Learning Outcome:													
<ul> <li>Knowledge of uniferent NGOS working methods during disaster.</li> <li>Understanding the needs and expectations of relief camps at the level of post disaster.</li> </ul>													
<ul> <li>Onderstanding the needs and expectations of relief camps at the level of post disaster.</li> <li>Development of new strategies of Poliof Operations</li> </ul>													
<ul> <li>Development of new strategies of Keller Operations.</li> <li>Development of mental and physical strength as an individual.</li> </ul>													
<ul> <li>Development of mental and physical strength as an individual.</li> <li>Knowledge of Government Policies towards disaster.</li> </ul>													
Knowledge of Government Policies towards disaster.  Theory syllabus													
												Hrs	
1	Man Made Disasters:											115	
-	11 War and Terrorism Piots and Demonstrations Posidential and Industrial Fires											15	
	Transportation Accidents, Nuclear Power Accidents, Hazardous Materials and Toxic												
	Emission, Utility Failure.												
2	Problems regarding victims and its awareness and Planning for disaster management:											15	
	<b>1.1</b> Saving Victims – First Twenty-Four Hours, Conducting Medical Relief Operations, Managing												
Relief Operations, Psychological Issues, Carrying Out Rehabilitation Work.													
<b>1.2</b> Local Disaster Management Cell, How to Prepare a Business Recovery Plan? Government													
Response in Disaster.													
Practio	cal cont	tent											
Refere	ence Bo	oks											