PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

(Estd. under the Panjab University Act VII of 1947 - enacted by the Govt. of India)

FACULTY OF PHARMACEUTICAL SCIENCES

SYLLABI

FOR

BACHELOR OF PHARMACY (B. PHARM.)

Ist – VIIIth CREDIT BASED SEMESTER SYSTEM

FOR THE EXAMINATION, 2014-2015

- -:α--

SEMESTER-WISE DISTRIBUTION OF MARKS & CREDITS

(Credit Based Semester System)

SEMESTER		THEOR			!RACTICA"#RE!ORT			TOTA" MARKS	TOTA" CREDITS
		NUMBER OF !A!ERS	MARKS	CREDITS	NUMBER OF !A!ERS	MARKS	CREDITS		
First	M	5	350	14	4	225	9	575	23
	B	5	325	13	5	250	10		
Second		5	375	15	4	275	11	650	26

BACHE"OR OF !HARMAC (B0 !HARM0) CREDIT BASED SEMESTER S STEM

SEMESTER - I

S()EME *F TE+(),-. +-/ E0+M,-+T,*-

!a1er	S234e5t	Tea56i78 H$2rs#Wee:		Credits		Sessi$7a% Mar:s	E9am0 Mar:s	T$ta%
		T	!	T	!			
THEOR								
1)+2M31011	*r "nic (he#istr%3,	3	3	3	3	15	60	75
1)+2M31021	1h"r#"ceutic"$ Techno$o %3, &.ener"$"nd /is4ensin 1h"r#"c%'	3	3	3	3	15	60	75
1)+2M31031	1h"r#"co nos%3,	3	3	3	3	15	60	75
1)+2M31051 &M'	2e#edi"$ M"the#"tics OR	3	3	3	3	15	60	75
1)+2M31051 &B'	2e#edi"$ Bio$o %	2	3	2	3	10	40	50
1)+2M31061	(o#4uter Science "nd +44$ic"tions	2	3	2	3	10	40	50

BACHE"OR OF !HARMAC (B0 !HARM0) CREDIT BASED SEMESTER S STEM

SEMESTER - II

S()EME *F TE+(),-. +-/ E0+M,-+T,*-

!a1er	S234e5t	Tea56i78 H$2rs#Wee:		Credits		Sessi$7a% Mar:s	E9am0 Mar:s	T$ta%
		T	!	T	!			
THEOR								
1)+2M32011	*r "nic (he#istr%3,,	3	3	3	3	15	60	75
1)+2M32012	1h"r#"ceutic"$+n"%%sis3,	3	3	3	3	15	60	75
1)+2M32021	1h%sic"$1h"r#"ceutics3,	3	3	3	3	15	60	75
1)+2M32041	+n"to#%91h%sio$o %"nd)e"$th Educ"tion3, &+1)E3,9 (e$$ Bio$o %'	3	3	3	3	15	60	75

BACHE"OR OF !HARMAC (B0 !HARM0) CREDIT BASED SEMESTER S STEM

SEMESTER - III

S()EME *F TE+(),- . +- / E0+M,-+T,*-

BACHE"OR OF !HARMAC (B0 !HARM0) CREDIT BASED SEMESTER S STEM

SEMESTER - ;
S()EME *F TE+(),- . +- / E0+M,-+T,* -

!a1er	S234e5t	Tea56i78 H$2rs#Wee:		Credits		Sessi$7a% Mar:s	E9am0 Mar:s	T$ta%
		T	!	T	!			
THEOR								
1)+2M35011	Medicin"$ (he#istr%3,,	3	3	3	3	15	60	75
1)+2M35012	Bioche#istr%	3	3	3	3	15	60	75
1)+2M35021	1h"r#"ceutic"$ Techno$o %3,,,	3	3	3	3	15	60	75
1)+2M35022	Bio$o ic"$ 1h"r#"c% "nd Biotechno$o %	3	3	3	3	15	60	75
1)+2M35041	1h"r#"co$o %3,,	3	3	3	3	15	60	75
!RACTICA"								
1)+2M35112	Bioche#istr% 1r"ctic"$	3	3	3	2	10	40	50
1)+2M35121	1h"r#"ceutic"$ Techno$o % 1r"ctic"$3,,,	3	351&Tutori"$'	3	3	15	60	75
1)+2M35122	Bio$o ic"$ 1h"r#"c% "nd Biotechno$o % 1r"ctic"$	3	351&Tutori"$'	3	3	15	60	75
1)+2M35141	1h"r#"co$o % 1r"ctic"$3,,	3	3	3	2	10	40	50
T$ta%		+,	+&	+,	+*			/(,

9(&)4.7151 9(T)-5.2326 3(u)3.00257(t)6.602(3)7167 82(%)4.8755(n)3.00257(o)-9.9696!0f0q

BACHE"OR OF !HARMAC (B0 !HARM0) CREDIT BASED SEMESTER S STEM

SEMESTER - ;I
S()EME *F TE+(),- . +- / E0+M,-+T,* -

!a1er	S234e5t	Tea56i78 H$2rs#Wee:		E9am0 H$2rs		Sessi$7a% Mar:s	E9am Mar:s	T$ta%
		T	!	T	!			
THEOR								
1)+2M36011	1h"r#"ceutic"$+n"$%sis3,,	3	3	3	3	15	60	75
1)+2M36012	Medicin"$(he#istr%3,,,	3	3	3	3	15	60	75
1)+2M36021	(os#eto$o %	3	3	3	3	15	60	75
1)+2M36022	1h"r#"ceutic"$=uris4rudence	2	3	2	3	10	40	50
1)+2M36031	1h"r#"co nos%3,:	3	3	3	3	15	60	75
1)+2M36041	1h"r#"co$o %3,,,	3	3	3	3	15	60	75
!RACTICA"								
1)+2M36111	1h"r#"ceutic"$+n"$%sis 1r"ctic"$3,,	3	3	3	2	10	40	50
1)+2M36112	Medicin"$(he#istr% 1r"ctic"$3,,,	3	3	3	2	10	40	50
1)+2M36121	(os#eto$o % 1r"ctic"$	3	3	3	2	10	40	50
1)+2M36131	1h"r#"co nos% 1r"ctic"$3,:	3	351&Tutori"$'	3	3	15	60	75
1)+2M36141	1h"r#"co$o % 1r"ctic"$3,,,	3	3	3	2	10	40	50
T$ta%		+.	+/	+.	++			.**

-ote! i' There 6i$7e #ini#u# one Session"$Ex"#in"tion in e"ch theor% 4"4er8

ii' ,ntern"$"ssess#ent for 4r"ctic"$6i$7e 7"sed on d"% to d"% 4erfor#"nce inc$udin +ttend"nce9 :iv" "nd ;"7or"tor% record8

iii' There 6i$7e "n industri"$>4h"r#"c% 4r"ctice tr"inin of four 6ee?s dur"tion "fter the co#4$etion of sixth se#ester ex"#in"tion8

BACHE"OR OF !HARMAC (B0 !HARM0) CREDIT BASED SEMESTER S STEM

SEMESTER - ;III

S()EME *F TE+(),- . +- / E0+M,-+T,* -

1"4er	Su7ject	Te"chin)ours>Aee?		(redits		Session"$ M"r?s	Ex"#8 M"r?s	Tot"$
		T	1	T	1			
THEOR								
1)+2M38011	Medicin"$ (he#istr%3,:	4	3	4	3	20	80	100
1)+2M38021	1h"r#"ceutic"$ Techno$o %3:	2	3	2	3	10	40	50
1)+2M38022	1h"r#"co?inetics "nd Bio4h"r#"ceutics3,,	2	3	2	3	10	40	50
1)+2M38023	($inic"$ 1h"r#"c%	3	3	3	3	15	60	75
1)+2M38031	1h"r#"co nos%3:,	3	3	3	3	15	60	75
!RACTICA"								
1)+2M38111	Medicin"$ (he#istr% 1r"ctic"$3,:	3	351&Tutori"$'	3	3	15	60	75
1)+2M38121	1h"r#"co?inetics9 Bio4h"r#"ceutics "nd ($inic"$ 1h"r#"c% 1r"ctic"$	3	351&Tutori"$'	3	3	15	60	75
1)+2M38131	1h"r#"co nos% 1r"ctic"$3:,	3	351&Tutori"$'	3	3	15	60	75
T$tal%		+'	+(	+'	)			,.,,

INSTRUCTIONS FOR !A!ER-SETTERS

T6e <$%%$=i78 1a1ers are $< &* mar:s >

!HARM-+*,+ (B)>	Remedia% Bi$%$8y
!HARM-+*/+>	C$m12ter S5ie75e
!HARM-'*+(>	Medi5i7a% C6emistry-I
!HARM-'*((>	!6arma5e2ti5a% Mi5r$3i$%$8y
!HARM-&*++>	!6ysi5a% C6emistry
!HARM-&*(+>	!6arma5e2ti5a% Te567$%$8y-II
!HARM-&*((>	!ri75i1%es $< !6arma5e2ti5a% O1erati$7s
!HARM-/*((>	!6arma5e2ti5a% ?2ris1r2de75e
!HARM-.*(+>	!6arma5e2ti5a% Te567$%$8y-I;
!HARM-.*((>	!6arma5$:i7eti5s a7d Bi$16arma5e2ti5s-I
!HARM--*(+>	!6arma5e2ti5a% Te567$%$8y-;
!HARM--*((>	!6arma5$:i7eti5s a7d Bi$16arma5e2ti5s-II

!a1er-Setters I7str25ti$7s <$r &* Mar:s

1. The Buestion 4"4ers sh"$$ 7e set for 40 #"r?s.
2. The Buestion 4"4er sh"$$ h"ve 7 Buestions. *ne Buestion sh"$$ 7e co#4u$sor% of 12 #"r?s of o7@ective>short "ns6er t%4e coverin the entire s%$$"7us.
3. +$$ other Buestions sh"$$ 7e of 7 #"r?s e"ch.
4. Tot"$ 5 Buestions "re to 7e "tte#4ted.
5. Cse of scientific non34ro r"##"7$e c"$cu$"tor is "$$o6ed in the ex"#in"tion.

!HARM-+*,+ (B) Remedia% Bi$%$8y

1. The Buestion 4"4er sh"$$ 7e set for 40 #"r?s.
2. The 4"4er shou$d 7e set into t6o 4"rts9 1"rt3, &Bot"n%' D 1"rt3,, &Eoo$o %'
3. 1"rt3, sh"$$ cont"in 4 Buestions of Bot"n%F the c"ndid"tes sh"$$ "tte#4t 3 Buestions out of 4.
4. 1"rt3,, sh"$$ cont"in 3 Buestions fro# Eoo$o %F the c"ndid"tes sh"$$ "tte#4t t6o Buestions out of 3.
5. +$$ the Buestions sh"$$ 7e of eBu"$ #"r?s.

T6e <$%%$=i78 1a1ers are $< /* mar:s >

!HARM-+*++	Or8a7i5 C6emistry-I
!HARM-+*(+	!6arma5e2ti5a% Te567$%$8y-I (@e7era% a7d Dis1e7si78 !6arma5y)
!HARM-+*'+	!6arma5$87$sy-I
!HARM-+*,+ (M)	Remedia% Mat6emati5s
!HARM-(*++	Or8a7i5 C6emistry-II
!HARM-(*+(	!6arma5e2ti5a% A7a%ysis-I
!HARM-(*(+	!6ysi5a% !6arma5e2ti5s-I
!HARM-(*&+	A7at$my! !6ysi$%$8y a7d Hea%t6 Ed25ati$7-I(A!HE-I! Ce%% Bi$%$8y)
!HARM-(*.+	!6arma5e2ti5a% Statisti5s

!HARM-'*++	C6emistry $< Nat2ra% !r$d25ts a7d i75%2di78 Heter$5y5%i5 5$m1$27ds
!HARM-'*(+	!6ysi5a% !6arma5e2ti5s-II
!HARM-'*'+	!6arma5$87$sy-II
!HARM-'*&+	A7at$my! !6ysi$%$8y a7d Hea%t6 Ed25ati$7-II (A!HE-II)
!HARM-&*'+	!6arma5$87$sy-III

S ""ABUS FOR BACHE"OR OF !HARMAC (B0 !HARM0)

CREDIT BASED SEMESTER S STEM

SEMESTER C I

!HARM-+*++›	Or8a7i5 C6emistry-I
!HARM-+*(+›	!6arma5e2ti5a% Te567$%$8y-I (@e7era% a7d Dis1e7si78 !6arma5y)
!HARM-+*'+›	!6arma5$87$sy-I
!HARM-+*,+(M)›	Remedia% Mat6emati5s
OR	
!HARM-+*,+(B)›	Remedia% Bi$%$8y
!HARM-+*/+›	C$m12ter S5ie75e a7d A11%i5ati$7s
!HARM-++++›	Or8a7i5 C6emistry !ra5ti5a%-I
!HARM-++(+›	!6arma5e2ti5a% Te567$%$8y !ra5ti5a%-I (@e7era% a7d Dis1e7si78 !6arma5y)
!HARM-++'+›	!6arma5$87$sy !ra5ti5a%-I
!HARM-++,+(B)›	Remedia% Bi$%$8y !ra5ti5a%
!HARM-++/+›	C$m12ter S5ie75e !ra5ti5a%

!HARM-+*++› Or8a7i5 C6emistry-I

' 6$2rs#=ee:

+0 Str25t2re a7d !r$5 49453(s)-8.41059( )-5.40787e-0.415943(5)-7.4689(e163(t)4.0871(r)-5.64236(y)1.410
077(H)-t97696(%)-5"
0740.59a97696(%)-5$396(A)78168"r›
077(H)-a97696(%)-5$396(A)78168&76 0 T*[12R448(132819295.4174.4 .2369fD-1e97696(%)-5M393782

(0 Stere$56emistry $< Or8a7i5 C$m1$27ds >

Stereoiso#ers9 en"ntio#ers9 di"stereoiso#ers9 o4tic"$ "ctivit%9 chir"$ centre9 r"ce#ic #odific"tion9 #eso3structures9 confi ur"tion9 re"ctions invo$vin stereoiso#ers9 stereose$ective "nd stereos4ecific re"ctions8

.eo#etric iso#ers9 confor#"tion"$ iso#ers9 confi ur"tion"$ iso#ers9 confor#"tion"$ "n"$%sis of eth"ne "nd n37ut"ne9 confor#"tions of c%c$ohex"nes9 "xi"$ "nd eBu"tori"$ 7onds9 -e6#"n 4ro@ections9 Fischer "nd Aed e for#u$"8

2e$"tive "nd "7so$ute confi ur"tion9 seBuence ru$es9 / D ;9 R D S "nd E D Z s%ste# of no#enc$"ture8

&4 ;ectures'

'0 A%:a7es a7d Cy5%$a%:a7es >

+$?"nes ! -o#enc$"ture of str"i ht "nd 7r"nched ch"in "$?"nes "nd "$?%$ rou4s9 c$"ssific"tion of c"r7on "to#s of "$?"nes9 iso#eris# in "$?"nes9 sources9 #ethods of 4re4"r"tion9 4h%sic"$ 4ro4erties "nd che#ic"$ re"ctions8

Mech"nis# of free r"dic"$ h"$o en"tion of "$?"nes9 orient"tion9 re"ctivit% "nd se$ectivit%9 ch$orof$uoroc"r7ons "nd oGone $"%er8

(%c$o"$?"nes! -o#enc$"ture9 #ethods of 4re4"r"tion9 che#ic"$ re"ctions9 B"e%er%s str"in theor%9 rin str"in9 iso#eris# in c%c$o4ent"ne "nd c%c$ohex"ne9 re"ctions of c"r7enes9 c%c$ic ethers9 cro6n ethers9 e4oxides8

Iu"ntit"tive e$e#ent"$ "n"$%sis "nd structure e$ucid"tion9 e#4iric"$ for#u$" "nd #o$ecu$"r for#u$"8

&8 ;ectures'

&0 A%:y% Ha%ides >

-o#enc$"ture "nd c$"sses of "$?%$ h"$ides9 #ethods of 4re4"r"tion9 che#ic"$ re"ctions9 #ech"nis#s of nuc$eo4hi$ic su7stitution re"ctions9 S-1 "nd S-2 re"ctions9 c"r7oniu# ions9 c"r7eniu# ions "nd c"r7oc"tions9 structure9 re$"tive st"7i$it%9 e"se of for#"tion9 re"rr"n e#ents "nd other ch"r"cteristics of c"r7oc"tions8

&4 ;ectures'

,0 A%5$6$%A Et6ers a7d R$%e $< t6e S$%Be7t >

-o#enc$"ture9 #ethods of 4re4"r"tion9 4h%sic"$ 4ro4erties "nd che#ic"$ re"ctions8

2o$e of So$vent! Second"r% 7ondin 9 so$u7i$it% of non3ionic "nd ionic so$utes9 4rotic "nd "4rotic so$vents9 ion 4"irs9 ro$e of so$vent in su7stitution re"ctions9 4h"se3tr"nsfer c"t"$%sis8

&4 ;ectures'

/0 A%**:**e**7**esA Die**7**es a**7**d A%**:**y**7**es **>**

+$?enes**! -** o**#**enc**$"**ture**9 #**ethods of **4**re**4"**r**"**tion**9 #**ech**"**nis**#**s of deh%dr**"**tion of **"$**coho**$**s **"**nd deh%droh**"$**o en**"**tion of **"$?%$** h**"$**ides**9** E1 **"**nd E2 re**"**ction **#**ech**"**nis**#**s**9 4**h%sic**"$ 4**ro**4**erties **"**nd re**$"**tive st**"7**i**$**ities of **"$?**enes**9** che**#**ic**"$** re**"**ctions**9 #**ech**"**nis**#**s of h%dro en**"**tion**9** e**$**ectro**4**hi**$**ic **"**nd free r**"**dic**"$ "**ditions**9** M**"**r**?**ovni**?**ov**H**s ru**$**e**9** h%dro**7**or**"**tion**3**oxid**"**tion**9** ox%**#**ercur**"**tion**3**reduction**9** e**4**oxid**"**tion**9** o**G**ono**$%**sis**9** h%dr**"**ti**19(**c**)2.85156**

.0 !res5ri1ti$7 >

/escri4tion "nd 4"rts of " 4rescri4tion9 h"nd$in the 4rescri4tion9 re"din the 4rescri4tion9 chec?in the 6ritten 4rescri4tion9 consu$tin the 4rescri7er9 other #ethods of receivin 4rescri4tion9 refus"$ to "cce4t the 4rescri4tionF co#4oundin the 4rescri4tion9 4ricin the 4rescri4tion9 de$iverin the 4rescri4tion8

&4 ;ectures'

-0 !6arma5e2ti5a% l75$m1ati3i%ities >

Physical and Chemical Incompatibilities! T%4es "nd #ethods to overco#e these8 ,nor "nic inco#4"ti7i$ities inc$udin inco#4"ti7i$ities of #et"$s "nd their s"$ts9 non3#et"$s9 "cids "nd "$?"$is8

&8 ;ectures'

B$$:s Re5$mme7ded >

18 2e#in ton9 The Science "nd 1r"ctice of 1h"r#"c%9 M"c? 1u7$ishin (o89 C8S8+8 ;"test Edition8

28 (oo4er =A9 .unn .8 Tutori"$ 1h"r#"c%8 1it#"n Boo?s ;td89 ;ondon8 ;"test Edition8

38 ("rter S=8 /is4ensin for 1h"r#"ceutic"$ Students8 1it#"n Boo?s ;td89 ;ondon8 ;"test Edition8

48 ;"ch#"n ;9 ;ie7enn"n)+9 J"ni =;8 The Theor% "nd 1r"ctice of ,ndus22222 1it#"n Bo

48

2e#in tod68hS ;";( ) -2.84144+8;-2.3884 6(o)d26.074(i)0.576525(n) -4.729

38

!HARM-**+*'+>** **!6**arma**5$87$**sy-I

' 6$2rs#**=**ee**:**

+0 **,**ntroduction**9** deve$o**4**#ent**9** **4**resent st**"**tus**9** si nific**"**nce **"**nd future sco**4**e of **4**h**"**r#**"**co nos%**8**

&2 **;**ectures'

(0 **,**ntroduction**9** c$**"**ssific**"**tion **6**ith ex**"**#**4**$es **"**nd i#**4**ort**"**nt **7**io$o ic**"**$ **"**ctivities of fo$$o**6**in rou**4**s of **4**$**"**nt constituents**!**

("r**7**oh%dr**"**tes &1 **;**ecture'**F** **+**$?**"**$oids &3 **;**ectures'**F** **.**$%cosides &inc$udin **"**nthr**"B**uinone **"**nd c**"**rdio**"**ctive $%cosides'**9** S**"4**onins**9** steroids **"**nd triter**4**enoids &3 **;**ectures'**F** F$**"**vonoids**9** $i n**"**ns**9** cou#**"**rins**9** t**"**nnins **"**nd **4**o$%**4**heno$ic co#**4**ounds &4 **;**ectures'**F** **;**i**4**ids **"**nd vo$**"**ti$e oi$s &2 **;**ectures'**F** **.**u#s**9** #uci$**"** es**9** resins **"**nd resin co#**7**in**"**tions &2 **;**ectures'

&15 **;**ectures'

'0 **(**$**"**ssific**"**tion of dru s**!** **+**$**4**h**"7**etic**"$9** #or**4**ho$o ic**"$9** t**"**xono#ic**"$9** **4**h**"**r#**"**co$o ic**"**$ **"**nd che#ic**"$8**

&1 **;**ecture'

&0 Bio$o ic**"**$ source**9** che#ic**"**$ constituents **"**nd uses o

! HARM-**+* , +** (B)› Remedia% Bi**$%$8**y

(6$2rs#**=**ee**:**

&0 Microsco4ic "nd che#ic"$ ex"#in"tion of di" nostic er "stic 4rinci4$es in 4o6dered crude dru s8

,0 Exercises on Bu"ntit"tive #icrosco4%8

B$$:s Re5$mme7ded

18 Ev"ns A(8 Tre"se "nd Ev"ns 1h"r#"co nos%8 AB S"unders ;td89 ;ondon8 16th Edition8

28 A"$is TE8 Text 7oo? of 1h"r#"co nos%8 =+ (hurchi$$;td89 ;ondon9 5th Edition or "v"i$"7$e re4rint

38 ="c?son B19 Sno6don / A8 1o6dered :e et"7$e /ru s8 S

SEMESTER **C** II

!HARM-**(*++**	Or**8**a**7**i**5** C**6**emistry-II
!HARM-**(*+(**	**!6**arma**5**e**2**ti**5**a% A**7**a%ysis-I
!HARM-**(*(+**	**!6**ysi**5**a% **!6**arma**5**e**2**ti**5**s-I
!HARM-**(*&+**	A**7**at**$**my **!6**ysi**$%$8**y a**7**d Hea%t**6** Ed**25**ati**$7**-I (A**!**HE-I Ce%% Bi**$%$8**y)
!HARM-**(*.+**	**!6**arma**5**e**2**ti**5**a% Statisti**5**s
!HARM-**(+++**	Or**8**a**7**i**5** C**6**emistry **!**ra**5**ti**5**a%-II
!HARM-**(++(**	**!6**arma**5**e**2**ti**5**a% A**7**a%ysis **!**ra**5**ti**5**a% **C**I
!HARM-**(+(+**	**!6**ysi**5**a% **!6**arma**5**e**2**ti**5**s **!**ra**5**ti**5**a% -I
!HARM-**(+&+**	A**7**at**$**my **!6**ysi**$%$8**y a**7**d Hea%t**6** Ed**25**ati**$7 !**ra**5**ti**5**a%-I (A**!**HE-I)

!HARM-**(*++>**	Or**8**a**7**i**5** C**6**emistry-II

(0 A5id Base Titrati$7s >

+cid 7"se conce4ts9 ro$e of the so$vent9 re$"tive stren ths of "cids "nd 7"ses9 ;"6 of #"ss "ction9 co##on ion effect9 ionic 4roduct of 6"ter9 4)9 h%dro$%sis of s"$ts9)"nderson <)"sse$7"ch eBu"tion9 7uffer "nd 7uffer c"4"cit%9 "cid 7"se indic"tors9 theor% of indic"tors9 choice of indic"tors9 neutr"$iG"tion curves &stron "cid stron 7"se9 stron "cid 6e"? 7"se9 6e"? "cid stron 7"se "nd 6e"? "cid 6e"? 7"se' 4o$%4rotic s%ste#s9 dissoci"tion c"cu"tions for 4o$%4rotic "cids9 fr"ctions "nd eBui$i7riu# concentr"tions of dissoci"tin s4ecies "t " iven 4)9 s"$ts of 4o$%4rotic "cids9 &"#4hoteric s"$ts "nd un4roton"ted s"$ts'9 7uffer c"cu"tions for 4o$%4rotic "cids9 titr"tions of 4o$%4rotic "cids9 "#ino "cid s%ste# "nd its titr"tions9 4h"r#"ceutic"$ "44$ic"tion in "ss"% of)$3B*$39)($9)$31*$49 -"*) "nd -"$2(*$38

&10 ;ectures'

'0 O9idati$7-Red25ti$7 Titrati$7s >

(once4ts of oxid"tion "nd reduction9 redox re"ctions9 eBuiv"$ent 6ei hts of oxidiGin "nd reducin " ents9 e$ectroche#ic"$ ce$$s9 reduction 4otenti"$9 st"nd"rd reduction 4otenti"$9 nernst eBu"tion9 ce$$ re4resent"tions9 #e"sure#ent of e$ectrode 4otenti"$ "nd its "44$ic"tion in deter#inin the eBui$i7riu# const"nt of " re"ction9 conce4t of for#"$ 4otenti"$9 oxid"tion reduction curves9 redox indic"tors9 theor% "nd 4rinci4$es of 4ot"ssiu# 4er#"n "n"te titr"tions9 iodo#etr% "nd iodi#etr%9 ceric su$4h"te titr"tions9 4ot"ssiu# iod"te titr"tions9 sodiu# 2963dich$oro4heno$3indo4heno$ titr"tions9 4h"r#"ceutic"$ "44$ic"tions8

&10 ;ectures'

&0 !re5i1itati$7 Titrati$7s >

1reci4it"tion re"ctions9 so$u7i$it% 4roduct9 effects of co##on ion9 "cids9 te#4er"ture "nd so$vent u4on the so$u7i$it% of " 4reci4it"te9 condition"$ so$u7i$it% 4roduct9 fr"ction"$ 4reci4it"tion9 "r ento#etric titr"tions9 "##oniu# or 4ot"ssiu# thioc%"n"te titr"tions9 #ercuric nitr"te titr"tions9 ,ndic"tors9 ."%3;uss"c #ethod9 Mohrls #ethod9 :o$h"rdls #ethod9 F"@"nls #ethod9 4h"r#"ceutic"$ "44$ic"tions8

&8 ;ectures'

,0 @raBimetri5 A7a%ysis >

1reci4it"tion techniBues9 the co$$oid"$ st"te9 r"vi#etric f"ctor9 su4ers"tur"tion9 :on Aei#"rn r"tio9 co4reci4it"tion "nd its t%4es9 4ost 4reci4it"tion9 di estion9 6"shin of the 4reci4it"te9 fi$tr"tion9 fi$ter 4"4ers "nd cruci7$es9 i nition9 ther#o r"vi#etric curves of co44er su$4h"te9 s4ecific ex"#4$es $i?e 7"riu# "s 7"riu# su$4h"te9 "$u#iniu# "s "$u#iniu# oxide9 c"$ciu# "s c"$ciu# ox"$"te "nd #" nesiu# "s #" nesiu# 4%ro4hos4h"te9 or "nic 4reci4it"nts8

&4 ;ectures'

B$$:s Re5$mme7ded >

18 Mendh"# =9 /enne% 2(9 B"rnes =/9 Tho#"s M8 :o e$%s Text7oo? of Iu"ntit"tive (he#ic"$ +n"$%sis8 1e"rson Educ"tion ;td9 Sin "4ore8 ;"test Edition8

28 (hristi"n . /8 +n"$%tic"$ (he#istr%8 =ohn Ai$e% "nd Sons9 -e6 Kor?8 ;"test Edition8

38 Bec?ett +)9 Sten$"?e =B8 1r"ctic"$ 1h"r#"ceutic"$ (he#istr%8 The +th$one 1ress of the Cniversit% of ;ondon9 ;ondon9 ;"test Edition8

48 ,ndi"n 1h"r#"co4oei"8 The ,ndi"n 1h"r#"co4ei" (o##ission9 (entr"$,ndi"n 1h"r#"co4ei" ;"7or"tor%9 .ovt8 of ,ndi"8 Ministr% of)e"$th "nd F"#i$% Ae$f"re9 .h"Gi"7"d8 ;"test Edition8

58 Sett$e F+8)"nd7oo? of ,nstru#ent"$ TechniBues for +n"$%tic"$ (he#istr%8 1e"rson Educ"tion9 ;td89 Sin "4ore8 ;"test Edition8

!HARM-(*(+> !6ysi5a% !6arma5e2ti5sCl

' 6$2rs#=ee:

+0 S$%23i%ity a7d re%ated !6e7$me7a >

.ener"$ consider"tions9 so$u7i$it% ex4ressions9 deter#in"tion of so$u7i$it%9 so$vent3so$ute inter"ctions9 so$u7i$it% of "ses in $iBuids9 $iBuids in $iBuids "nd so$ids in $iBuids9 4resent"tion of so$u7i$it% d"t"9 so$u7i$it% 4"r"#eter9 so$u7i$it% curves9 so$u7i$it% 4roduct9 effect of co3so$vents9 4) D other f"ctors8

&10 ;ectures'

(0 I7ter<a5ia% !6e7$me7a >

2818 Surf"ce D ,nterf"ci"$ Tension! *ri in D di#ensions9 surf"ce free ener %9 cont"ct "n $e9 4ressure difference "cross curved surf"ces9 #e"sure#ent of surf"ce "nd interf"ci"$ tensions9 s4re"din coefficient9 surf"ce fi$#s8

2828 Surf"ce +ctive " ents! (he#ic"$ c$"ssific"tion9);B9 so$u7i$iG"tion "nd co3 so$u7i$iG"tion9 .i77Ls "dsor4tion eBu"tion9 critic"$ #ice$$"r concentr"tion9 e#u$sific"tion9 6ettin 9i#7i7ition9 deter enc%9 etc8

2838 +dsor4tion "t so$id surf"ce>interf"ce! E$ectric"$ 4ro4erties of interf"ces9 interf"ci"$ 4ro4erties of 4"rtic$es in sus4ensions8

&9 ;ectures'

'0 R6e$%$8y >

Sco4e "nd conce4ts9 -e6toni"n s%ste#s "nd viscosit%9 -on3-e6toni"n s%ste#s D f$o6 ex4ressions9 thixotro4%9 deter#in"tion of viscosit% "nd other rheo$o ic"$ 4"r"#eters9 "44$ic"tions in 4h"r#"ceutic"$ 4roduct deve$o4#ent8

&7 ;ectures'

&0 Mi5r$meriti5s a7d !$=der R6e$%$8y›

,ntroduction9 i#4ort"nce in 4h"r#"c%9 4"rtic$e siGe "nd siGe distri7ution9 4"rtic$e sh"4e9 4"rtic$e vo$u#e9 #ethods of deter#inin 4"rtic$e siGe9 st"tistic"$ di"#eters fro# nu#7er "nd 6ei ht distri7utions9 (ou$ter3counter #ethod for deter#inin 4"rtic$e vo$u#e9 s4ecific surf"ce9 4"rtic$e nu#7er9 4"rtic$e vo$u#e9 derived 4ro4erties of 4o6ders9 4orosit%9 densit%9 "n $e of re4ose8 F$o6 4ro4erties of 4o6ders "nd f"ctors "ffectin these8

&10 ;ectures'

B$$:s Re5$mme7ded›

18 M"rtin A9 S6"r7ric? =9 ("##"r"t" +8 1h%sic"$ 1h"r#"c%8 ;e" "nd Fe7i er9 1hi$"de$4hi"8 ;"test Edition8

28 2e#in ton! The Science "nd 1r"ctice of 1h"r#"c%8 M"c? 1u7$ishin (o89 C8S8+8 ;"test Edition8

!HARM-(*&+› A7at$myA !6ysi$%$8y a7d Hea%t6 Ed25ati$7-I (A!HE-I Ce%% Bi$%$8y)

' 6$2rs#=ee:

+0

,0 !6ysi$%$8y $< B%$$d Ce%%s >

2ed 7$ood ce$$s9 6hite 7$ood ce$$s9 4$"te$ets9 7$ood rou4s9 2h f"ctor9 tr"nsfusion9 he#ost"sis8

&4 ;ectures'

/0 Ce%%2%ar Si87a%i78 >

-eurotr"ns#ittersF 2ece4tors! .34roteins cou4$ed "nd ion ch"nne$ "ted rece4tors9 e$ectric"$ si n"$s in neurons9 si n"$ tr"ns#ission "t s%n"4ses9 neur"$ circuits9 intr"ce$$u$"r second"r% #essen ers8

&3 ;ectures'

.0 Hea%t6 Ed25ati$7 >

(once4ts of he"$th "nd dise"se8 /ise"se c"usin " ents "nd 4revention of dise"se8

&3 ;ectures'

-0 N2triti$7 >

B"$"nced diet9 nutrition"$ "nd vit"#in reBuuneB""7r(n)5.3906 3(d813(t)-5.039/")-0.99609 4($)4nc

(ddr6

-0; C$

B"$nsursd813(t)-5.-0.91 88(i)-0.50731(")-0121.36719(

!HARM-(*.+› !6arma5e2ti5a% Statisti5s

' 6$2rs#=ee:

18 The conce4ts9 #"the#"tic"$ co#4ut"tion &6herever "44$ic"7$e' "nd 4h"r#"ceutic"$ "44$ic"tions &6herever 4ossi7$e' on!

Si nific"nt di its "nd roundin of nu#7ers9 co$$ection of 4ri#"r% "nd second"r% d"t" throu h ex4eri#ents on surve%s9 s"#4$in "nd co#4$ete enu#er"tion surve%9 #erits "nd $i#it"tions of v"rious r"ndo# "nd non3r"ndo# s"#4$in #ethods9 d"t" or "niG"tion inc$udin freBuenc% distri7utions "nd t"7u$"tion9 di" r"###"tic re4resent"tion of d"t"9 si#4$e9 #u$ti4$e9 su73divided "nd f$o"tin 7"r di" r"#s9 4ie di" r"#s9 23/ "nd 33/ 4icto r"4hic re4resent"tion9 r"4hs of freBuenc% "nd cu#u$"tive freBuenc% distri7utions8

&10 ;ectures'

28 Me"sures of centr"$ tendenc%9 ide"$ ch"r"cteristics9 #e"n9 #edi"n9 #ode9 .M9)M "nd 6ei hted "rith#etic #e"n fro# discrete "nd continuous freBuenc% distri7utions9 Bu"rti$es9 deci$es "nd 4ercenti$es9 #e"sures of dis4ersion9 r"n e9 Bu"rti$e devi"tion9 #e"n devi"tion9 st"nd"rd devi"tion9 c"cu"tion of st"nd"rd devi"tion fro# discrete "nd continuous freBuenc% distri7utions9 st"nd"rd error of #e"ns9 coefficient of v"ri"tion8

&10 ;ectures'

38 1ro7"7i$it% "nd events9 B"%eLs theore#9 4ro7"7i$it% theore#s9 e$e#ents of 7ino#i"$ "nd 1oisson distri7ution9 nor#"$ distri7ution9 nor#"$ distri7ution curve "nd 4ro4erties9 c"cu"tion of "re"s under nor#"$ curve "nd st"nd"rd nor#"$ v"ri"te &E st"tistic'9 confidence $i#its9 devi"tions fro# nor#"$it%9 ?urtosis "nd s?e6ness9 e$e#ents of centr"$ $i#it theore#8

&8 ;ectures'

48 ;ine"r corre$"tion "nd re ression "n"$%sis sc"tter 4$ots9 #ethod of $e"st sBu"res9 1e"rsoni"n coefficients of corre$"tion "nd deter#in"tion9 definitions of "#ount of ex4$"ined v"ri"nce9 st"nd"rd error of esti#"te "nd si nific"nce of re ression &F'8

&7 ;ectures'

58 St"tistic"$ inference9 T%4e , "nd ,, errors9 StudentsLs t3test &4"ired "nd un4"ired'9 F3 test one 6"% "nd t6o 6"% +-*:+8 -on4"r"#etric tests9 Si n test9 (hi3 sBu"re test9 Ai$coxon si ned r"n? test9 M"nn Ahiten% test9 S4e"r#"nLs r"n? corre$"tion8

&6 ;ectures'

B$$:s Re5$mme7ded ›

18 Bo$ton S8 1h"r#"ceutic"$ St"tistics9 1r"ctic"$ "nd ($inic"$ +44$ic"tions8 M"rce$ /e??er9 -e6 Kor?8 ;"test Edition8

28 .u4t" S18 St"tistic"$ Methods8 Su$t"n (h"nd D (o89 -e6 /e$hi8 ;"test Edition8

38 /"nie$ AA8 Biost"tics! + Found"tion for +n"$%sis in)e"$th Science8 =ohn Ai$e%9 -e6 Kor?8 ;"test Edition8

!HARM-**(+&+›** A**7**at**$**myA **!6**ysi**$%$8**y a**7**d Hea%t**6** Ed**25**ati**$7 !**ra**5**ti**5**a%**C**l
(A**!**HE **!**ra**5**ti**5**a%**C**l)

& 6$2rs#**=**ee**:**

+0 +n**"**to#% of **)**u#**"**n S?e$eton8

(0)"e#**"**to$o %&**2**B**(D A**B**(** counts9 h**"**e#o $o**7**in concentr**"**tion9 **7**$eedin **D** c$ottin ti#e'8

'0 +n**"**to#% of v**"**rious ce$$s **6**ith the **"**id of histo$o ic**"**$ s$ides8

SEMESTER C III

!HARM-'*++	C6emistry $< Nat2ra% !r$d25ts i75%2di78 Heter$5y5%i5 C$m1$27ds
!HARM-'*+(	Medi5i7a% C6emistry-I
!HARM-'*(+	!6ysi5a% !6arma5e2ti5s-II
!HARM-'*((	!6arma5e2ti5a% Mi5r$3i$%$8y
!HARM-'*'+	!6arma5$87$sy-II
!HARM-'*&+	A7at$myA !6ysi$%$8y a7d Hea%t6 Ed25ati$7-II (A!HE-II)
!HARM-'+++	C6emistry $< Nat2ra% !r$d25ts a7d Heter$5y5%es !ra5ti5a%
!HARM-'++(	Medi5i7a% C6emistry !ra5ti5a%-I
!HARM-'+(+	!6ysi5a% !6arma5e2ti5s !ra5ti5a%-II
!HARM-'+((	!6arma5e2ti5a% Mi5r$3i$%$8y !ra5ti5a%
!HARM-'+'+	!6arma5$87$sy !ra5ti5a%-II
!HARM-'+&+	A7at$myA !6ysi$%$8y a7d Hea%t6 Ed25ati$7 !ra5ti5a%-II (A!HE-II)
!HARM-'*++>	C6emistry $< Nat2ra% !r$d25ts i75%2di78 Heter$5y5%i5 C$m1$27ds

' 6$2rs#=ee:

The fo$$o6in to4ics sh"$$ 7e tre"ted in "ccord"nce 6ith #odern 4ers4ectives of structure9 stereoche#istr% "nd re"ction #ech"nis# "nd in re$"tion to 4h"r#"ceutic"$ "nd #edicin"$ che#istr%8

+0 Heter$5y5%i5 C6emistry>

-o#enc$"ture9 structure9 re"ctions "nd s%nthesis of different heteroc%c$ic s%ste#s! 4%rro$e9 fur"n9 thio4hene9 4%ridine9 4%r"Go$e9 i#id"Go$e9 ox"Go$e9 thi"Go$e9 Buino$ine9 isoBuino$ine9 4henothi"Gine "nd "cridine8

&15 ;ectures'

(0 Nat2ra% !r$d25ts>

2818 .$%coside inc$udin c"rdi"c $%cosides "nd s"4onins! Brief introduction9 occurrence9

/0 T$1i5a% A8e7ts >

6818 1rotective To4ic"$ + ents! /efinitionF t"$c9 inso$u7$e Ginc co#4ounds &Ginc oxide9 c"$"#ine9 Ginc ste"r"te'9 tit"niu# dioxide9 "$u#iniu# "nd si$icone 4o$%#er8

6828 +nti#icro7i"$s "nd +strin ents! +nti#icro7i"$ ter#ino$o %9 #ech"nis# of "ction9 contro$ of "nti#icro7i"$>"strin ent "ction8

6838 +nti#icro7i"$ +strin ent 1roducts! *xid"tive "nti#icro7i"$ " entsF h%dro en 4eroxide9 Ginc 4eroxide9 sodiu# c"r7on"te9 4ot"ssiu# 4er#"n "n"te9 sodiu# h%4och$orite9 iodine 4re4"r"tion "nd co#4ounds8

6848 1rotein 1reci4it"nt +nti#icro7i"$ + ents! Si$ver nitr"te9 #i$d si$ver 4rotein "nd re$"ted 4roducts9 %e$$o6 #ercuric oxide9 "##oni"ted #ercur%9 #ercuric ch$oride9 su$4hur "nd su$4hur co#4ounds9 su7$i#ed su$4hur "nd 4reci4it"ted su$4hur9 7oric "cid "nd sodiu# 7or"te9 "nti#on% 4ot"ssiu# t"rtr"te8

6858 +strin ents! *ffici"$ co#4ounds of "$u#iniu# "nd Ginc8

&8 ;ectures'

.0 De7ta% !r$d25ts >

7818 +ntic"ries " ents! f$uorides &Sodiu# f$uoride9 St"nnous f$uoride'9 4hos4h"tes8

7828 /entifrices! dentifrices cont"inin f$uorides &1u#ice' "nd desensitiGin " ents &Einc ch$oride "nd Einc3Eu eno$ ce#ent'8

&4 ;ectures'

-0 Mis5e%%a7e$2s I7$r8a7i5 !6arma5e2ti5a% A8e7ts >
,nh"$"nts9 res4ir"tor% sti#u$"nts9 "ntidotes9 ex4ector"nts "nd e#etics8

&2 ;ectures'

B$$:s Re5$mme7ded >

18 B$oc? =)9 2oche E9 Soine T*9 Ai$son (*8 ,nor "nic M

+0 !arti5%e !6e7$me7a›

;o6 D hi h ener % so$ids9 inter#o$ecu$"r forces9 4"rtic$e34"rtic$e inter"ctions9 4"rtic$e inter"ctions in $iBuids9 f$occu$"tion ?inetics8

&2 ;ectures'

(0 C$%%$ids›

/is4ersed s%ste#s9 #ethods of 4re4"r"tion of co$$oid"$ dis4ersions9 siGe D sh"4e of co$$oid"$ 4"rtic$es9 4h"r#"ceutic"$ "44$ic"tions9 t%4es of co$$oid"$ s%ste#s9 o4tic"$9 ?inetic D e$ectric"$ 4ro4erties9 "nd st"7i$it% of co$$oid"$ s%ste#s9 sensitiG"tion D 4rotective co$$oid "ction8

&10 ;ectures'

'0

&0 Stud% of dru s cont"inin resins "nd resin co#7in"tions! (o$o4hon%9 1odo4h%$$u#9 ("nn"7is9 M%rrh9 +s"foetid"9 B"$s"# of To$u9 BenGoin "nd Stor"x8

&9 ;ectures'

,0 Stud% of t"nnins "nd t"nnin cont"inin dru s ! ."#7ir9 ("techu "nd)"#"#e$is8

&5 ;ectures'

/0 Sources9 che#ic"$ tests for identit% "nd s"$ient #icrosco4ic fe"tures of the fo$$o6in fi7res!

(otton9 =ute9 F$"x9 Si$?9 6oo$9 2"%on9 -%$on "nd +s7estos8

&8 ;ectures'

.0 Stud% of the 7io$o ic"$ sources9 constituents "nd uses of the fo$$o6in se$ected dru s fro# "ni#"$ sources!

("nth"rides9 Bees6"x9 Aoo$ f"t9 (od $iver oi$9)one% "nd .e$"tin8

&5 ;ectures'

-0 1re4"r"tion of her7"riu# s4eci#ens of 4$"nt dru s8

&1 ;ecture'

B$$:s Re5$mme7ded >

18 T%$or :E9 Br"d% ;29 2o77ers =E8 1h"r#"co nos%8 JM :"r hese (o#4"n%9 Bo#7"%8 9th Edition8

28 Ev"ns A(9 Tre"se "nd Ev"ns 1h"r#"co nos%8 AB S"unders ;td89 ;ondon8 16th Edition8

38 2o77inson T9 The *r "nic (onstituent of)i her 1$"nts8 Bur e 1u7$ishin (o89 ;"test Edition8

!HARM-'*&+> A7at$myA !6ysi$%$8y a7d Hea%t6 Ed25ati$7-II

' 6$2rs#=ee:

+0 Ner B$2s System >

-euron "nd its neurotr"ns#ission9 structure of 7r"in D s4in"$ cord9 s4in"$ ref$exes9 "rr"n e#ent "nd functions of "utono#ic nervous s%ste#F 7"s"$ "n $i"9 reticu$"r "ctiv"tin s%ste#9 h%4oth"$"#us9 $i#7ic s%ste# "nd cere7r"$ cortexF si nific"nce of e$ectroence4h"$o r"#8

&10 ;ectures'

Bac e or of P ar acy e ester yste

(0 Cardi$Bas52%ar System >

' 6$2rs#=ee**:**

+n**"**$%sis of f**"**ts **"**nd oi$s **"**nd extr**"**ction of se$ected n**"**tur**"**$ **4**roductsF **4**re**4"r"**tive or **"**nic **4**h**"r#"**ceutic**"**$ che#istr%8

B**$$:**s Re**5$**mme**7**ded›

1. M**"**nn F**.**9 S**"**unders B**(**8 **1r"**ctic**"**$ ***r **"**nic **(**he#istr%8 ***r**ient **;**on **#"**n **;**i#ited9 **)**%der**"7"**d8 **;"**test Edition8
2. Furniss BS9 **)"**nn**"**ford **+=**9 S#ith **1A.**9 T**"**tche$$ **+2**8 **:**o e$Ls text**7**oo**?** of **1**r**"**ctic**"**$ ***r **"**nic **(**he#istr%8 **1**e**"**rson Educ**"**tion **;**td9 Sin **"4**ore8 **;"**test Edition8
3. **,**ndi**"**n **1**h**"r#"**co**4**oei**"**8 The **,**ndi**"**n **1**h**"r#"**co**4**ei**"** **(**o**##**ission9 **(**entr**"**$ **,**ndi**"**n **1**h**"r#"**co**4**ei**"** **;"7**or**"**tor%9 **.**ovt8 of **,**ndi**"**8 Ministr% of **)**e**"**$th **"**nd F**"#**i$% **A**e$f**"**re9 **.**h**"**Gi**"7"**d8 **;"**test Edition8
4. British **1**h**"r#"**co**4**oei**"**8 The St**"**tioner% ***ffice on **7**eh**"**$f of the Medicine **"**nd **)**e**"**$th c**"**re **4**roduct **2**e u$**"**tor% **+** enc%9 **;**ondon8 **;"**test Edition8

!HARM-**'++(›** Medi**5**i**7**a% C**6**emistry **!**ra**5**ti**5**a%-I

(6$2rs#=ee**:**

+0 **1**urific**"**tion of Se$ected **,**nor **"**nic **1**h**"r#"**ceutic**"**$s**!** **(**o**44**er su$**4**h**"**te **"**nd ferrous su$**4**h**"**te8

(0 **1**re**4"r"**tion of Se$ected **,**nor **"**nic **1**h**"r#"**ceutic**"**$s**!** **1**ot**"**sh **"**$u**#**9 Mohr s**"**$t9 ferrous ox**"$"**te **"**nd sodiu**#** ferric ox**"$"**te8

'0 **;**i**#**it Test for **,#4**urities in **1**h**"r#"**ceutic**"**$ **(**o**#4**ounds**!** **(**h$oride9 su$**4**h**"**te **"**nd **,**ron8

B**$$:**s Re**5$**mme**7**ded›

1. Sveh$**"** **.**8 **:**o e$Ls Text**7**oo**?** of Micro **"**nd Se**#**i**#**icro3**I** u**"**$it**"**tive **,**nor **"**nic **+**n**"**$%sis8 ***r**ient **;**on **#"**n9 **)**%der**"7"**d8 **;"**test Edition8
2. **,**ndi**"**n **1**h**"r#"**co**4**oei**"**8 The **,**ndi**"**n **1**h**"r#"**co**4**ei**"** **(**o**##**ission9 **(**entr**"**$ **,**ndi**"**n **1**h**"r#"**co**4**ei**"** **;"7**or**"**tor%9 **.**ovt8 of **,**ndi**"**8 Ministr% of **)**e**"**$th **"**nd F**"#**i$% **A**e$f**"**re9 **.**h**"**Gi**"7"**d8 **;"**test Edition8

' 6$2rs#=ee:

+0 To stud% the inf$uence of 4) on de r"d"tion of " dru 8

(0 To stud% the so$u7i$it% of 7in"r% s%ste# of 4heno$ "nd 6"ter "t different te#4er"tures "nd concentr"tions8

'0 To stud% the inf$uence of " third co#4onent on the C(T of 4heno$36"ter 7in"r% s%ste#8

&0 To stud% the tern"r% 4h"se s%ste# usin iven so$vent co#7in"tions8

,0 To stud% the inf$uence of 4) on so$u7i$it% 7eh"viour of " iven 6e"? e$ectro$%te8

/0 To stud% the inf$uence of surf"ct"nt on the so$u7i$it% of "n inso$u7$e dru 8

.0 To stud% the 4"rtition coefficient of " iven dru 8

-0 To deter#ine the 2);B v"$ue for " iven e#u$sion8

)0 To deter#ine the 6or? done in the e#u$sific"tion 4rocess8

+*0 To stud% the 4rotein 7indin of " iven dru 8

++0 To stud% the 4heno#enon of co#4$ex"tion8

!HARM-'+((> !6arma5e2ti5a% Mi5r$3i$%$8y !ra5ti5a%

' 6$2rs#=ee:

+0 Microsco4ic ex"#in"tion ... [illegible]

' **6$2**rs#**=**ee**:**

SEMESTER - I;

!HARM-&*++	!6ysi5a% C6emistry
!HARM-&*(+	!6arma5e2ti5a% Te567$%$8y-II
!HARM-&*((	!ri75i1%es $< !6arma5e2ti5a% O1erati$7s
!HARM-&*'+	!6arma5$87$sy-III
!HARM-&*&+	!6arma5$%$8y-I
!HARM-&*-+	E7Bir$7me7ta% St2dies
!HARM-&+++	!6ysi5a% C6emistry !ra5ti5a%
!HARM-&+(+	!6arma5e2ti5a% Te567$%$8y !ra5ti5a%-II
!HARM-&+((	!6arma5e2ti5a% O1erati$7s !ra5ti5a%
!HARM-&+'+	!6arma5$87$sy !ra5ti5a%-III
!HARM-&+&+	!6arma5$%$8y !ra5ti5a%-I

!HARM-&*++> !6ysi5a% C6emistry

(6$2rs#=ee:

+0 State $< Matter >

1818 ."seous St"te! The critic"$ 4heno#enon &critic"$ te#4er"ture9 critic"$ 4ressure9 critic"$ vo$u#e9 13: isother# of c"r7on dioxide8 :"n der A""$s eBu"tion "nd critic"$ st"te9 the 4rinci4$e of corres4ondin st"tes8

1828 ;iBuids! +dditive "nd constitutive 4ro4erties9 #o$"r vo$u#e9 #o$"r refr"ction9 di4o$e #o#ent9 4"r"chor9 o4tic"$ rot"tion9 h%dro4ho7icit%9 "nd their i#4ort"nce in structure e$ucid"tion8

1838

4828 **("t"$%sis! (h"r"cteristics of c"t"$%Ged re"ctionsF definition of the ter#s9 "utoc"t"$%sis9 ne "tive c"t"$%sis9 inhi7itors9 4ro#oters9 ho#o eneous "nd hetero eneous c"t"$%sis9 "cid 7"se c"t"$%sis "nd its #ech"nis#9 enG%#e c"t"$%sis9 Mich"e$is Menten eBu"tion9 turn over nu#7er9 the ;ine6e"ver3Bur? #ethod8**

&2 ;ectures'

,0 Ase**1**ti**5** Te**567**i**E2**es >
Sources of cont"#in"tion "nd #ethod of **4**revention9 desi n of "n "se**4**tic "re" site si**G**e9 **6**indo**6**s9 doors "nd services9 $"#in"r f$o**6** hoods "nd their efficienc% tests8
&5 ;ectures'

/0 **I 2**a%ity C**$7**tr**$**% Tests **$7 !**are**7**tera%s >
,ns**4**ection for **4"**rticu$"te #"tter8 Testin for f"u$t% se"$s8
Steri$it% Tests! ,ntroduction to the cu$ture #edi" used9 testin **4**rocedures9 contro$s9 in"ctiv"tion of "nti**7"**cteri"$ s"#**4**es9 " **7**rief out$ine of tests on**3**4o**6**ders9 oi$s "nd oint#ents8
1%ro en Tests! **+ 7**rief out$ine of the Sh"# test "nd the **;+;** test8
&15 ;ectures'

B**$$:**s Re**5$**mme**7**ded >

1. **1**e$c**G"**r M=8 **2**eid "nd **(**h"n Micro**7**io$o %8 T"t" Mc**.**r"**6)**i$$ **1**u**7**$ishin **(**o89 **-**e**6 /**e$hi8 **;"**test Edition8
2. **("**rter S=8 **(**oo**4**er "nd **.**unnls **/**is**4**ensin for **1**h"r#"ceutic"$ Students8 **1**it#"n Medic"$ **1**u**7**$ishin **(**o89 **-**e**6 /**e$hi8 **;"**test Edition8
3. **2**e#in ton! The Science "nd **1**r"ctice of **1**h"r#"c%9 ;i**44**incott **A**i$$i"#s "nd **A**i$?ins9 **C**S**+**8 **;"**test Edition8
4. **)**u o **A**B9 **2**usse$ **+ /**9 **1**h"r#"ceutic"$ Micro**7**io$o %8 B$"c?**6**e$$ Scientific **1**u**7**$ic"tions8 ;ondon8 **;"**test Edition8

!HARM **&*((>** **!**ri**75**i**1**%es **$< !6**arma**5**e**2**ti**5**a% O**1**erati**$7**s

(6$2rs#**=**ee**:**

+0 I**7**tr**$**d**25**ti**$7** >
Fund"#ent"$ **4**rinci**4**es>$"**6**s9 si#**4$**e c"ses of #"teri"$ **7"$"**nces **"44$**ied on sin $e units9 unit conversions8
&3 ;ectures'

(0 F%**2**id F%**$=** >
M"no#eters9 &**C3**tu**7**e9 differenti"$ "nd inc$ined tu**7**e'9 conce**4**t of **7**ound"r% $"%er9 **7"**sic e**B**u"tions of f$uid f$o**6**9 v"$ves9 **4**u#**4**s3 e"r9 reci**4**roc"tin "nd centrifu "$9 f$o**6** #eters8
&5 ;ectures'

'0 Mi**9**i**78** >
Theories of #ixin 9 #ixin devices &**4**ro**4**e$$ers9 tur**7**ines "nd **4"**dd$es'9 #ixin of so$ids8
&3 ;ectures'

&0 Fi%trati$7 >

Theor% of fi$tr"tion9 fi$ter "ids9 fi$terin #edi" "nd v"rious fi$ters9 4$"te "nd fr"#e fi$ter 4ress9 rot"r% dru# fi$ters9 #et"fi$ters9 fi$ter c"nd$es9 u$tr"fi$tr"tion9 n"nofi$tr"tion8

&5 ;ectures'

,0

B$$:s Re5$mme7ded >

1. Mc("7e "nd S#ith9 Cnit *4er"tions for (he#ic"$ En ineerin 9 Mc.r"6)i$$ (o89 -e6 Kor?8 ;"test Edition8
2. ("rter S=8 (oo4er "nd .unnLs /is4ensin for 1h"r#"ceutic"$ Students8 1it#"n Medic"$ 1u7$ishin (o89 -e6 /e$hi8 ;"test Edition8
3. ;"ch#"n ;+9 ;i7er#"n)+9 J"ni 9 =;8 The Theor% "nd 1r"ctice of ,ndustri"$ 1h"r#"c%9 ;e" "nd Fe7i er9 1hi$"de$4hi"9 C8S8+8 ;"test Edition8
4. B"d er9 ,ntroduction to (he#ic"$ En ineerin 8 Mc.r"6)i$$ (o89 -e6 Kor?8 ;"test Edition8
5. 2o6$ins E+8 Bent$e%Ls Text Boo? of 1h"r#"ceutics8 B"i$$iere Tind"$$ "nd (ox9 ;ondon8 ;"test Edition8
6.

1828 ,ndo$e . rou4! ("th"r"nthus9 - uxvo#ic"9 1h%sosti #"9 Er ot "nd (Ra2=$%kia)8
&3 ;ectures'

1828 ,#id"Go$e . rou4! 1i$oc"r4us8
&1 ;ecture'

1828 Steroid"$. rou4! :er"tru# "nd Jurchi8
&2 ;ectures'

1828 +$?"$oid"$ "#ine . rou4! E4hedr" "nd (C$%56i52m)8
&2 ;ectures'

28 Stud% of fo$$o6in 4$"nt "d"4to ens for their che#ic"$ constituents "nd 4h"r#"co$o ic"$ 4ro4erties! . insen 9 +sh6" "ndh"9 Br"h#i9 . in? o9 E$eutherococcus8
&4 ;ectures'

38 Bio$o ic"$ sources9 4re4"r"tion9 identific"tion tests "nd uses of the fo$$o6in enG%#es! 1"4"in9 1e4sin9 1"ncre"tin8
&2 ;ectures'

48 Stud% of #ev"$onic "nd shi?i#ic "cid 4"th6"%s 6ith s4eci"$ reference to the 7ios%nthesis of cinchon" "nd tro4"ne "$?"$oids9 di it"$is $%cosides9 f$"vonoids "nd ter4enoids8
&12 ;ectures'

B$$:s Re5$mme7ded >

1. T%$or :E9 Br"d% ;29 2o77ers =E8 1h"r#"co nos%8 JM :"r hese (o#4"n%9 Bo#7"%8 9th Edition8
2. Ev"ns A (9 Tre"se "nd Ev"ns 1h"r#"co nos%8 AB S"unders ;td89 ;ondon8 16th Edition8
3. /e6ic? 1M9 Medicin"$ - "tur"$ 1roducts8 =ohn Ai$e% D sons ;td89 Aest Sussex8 3rd Edition8
4. +t"$ (J9 J"4ur BM8 (u$tiv"tion "nd Cti$iG"tion of Medicin"$ 1$"nts9 (S,29 ,ndi"8

!HARM-&*&+> !6arma5$%$8y-I

' 6$2rs#=ee:

+0 I7tr$d25ti$7 >

/efinition9 historic"$ deve$o4#ent9 "nd sco4e of 4h"r#"co$o %8
&1 ;ecture'

(0 !6arma5$dy7ami5s >

Moecu"r #ech"nis#s of dru "ction9 rece4tors9 rece4tor c$"ssific"tion9 theor% of dru 3 rece4tor inter"ctions9 4otenti"tion9 "nt" onis# 4heno#enon8
&4 ;ectures'

2828 **A"**ter **2**esources
Cse **"**nd over3uti$iG**"**tion of surf**"**ce **"**nd round **6"**ter9 f$oods9 drou ht9 conf$icts over **6"**ter9 d**"**#s 3 **7**enefits **"**nd **4**ro**7**$e#s9 **6"**ter **B**u**"**$it% #**"**n**"** e#ent 3 #**"**n**"** e#ent of **6"**ter resources inc$udin rivers9 $**"?**es9 round **6"**ter9 f$urosis **"**nd **"**rsenic **4**ro**7**$e#s8

2838 Miner**"**$ **2**esources
Cse **"**nd ex**4**$oit**"**tion9 environ#ent**"**$ effects of extr**"**ctin **"**nd usin #iner**"**$ resources9 c**"**se studies8

2848 Food **2**esources
Aor$d food **4**ro**7**$e#s9 ch**"**n es c**"**used **7**% **"** ricu$ture **"**nd over r**"G**in 9 effects of #odern **"** ricu$ture9 ferti$iGer**34**esticide **4**ro**7**$e#s9 **6"**ter $o in 9 s**"**$init%9 c**"**se studies8

2858 Ener % **2**esources
.ro**6**in ener % needs9 rene**6"7**$e **"**nd non3rene**6"7**$e ener % sources9 use of **"**$tern**"**te ener % sources9 c**"**se studies8

2868 **;"**nd **2**esources
;"nd **"**s **"** resource9 $**"**nd de r**"**d**"**tion9 #**"**n induced $**"**nds$ides9 soi$ erosion **"**nd desertific**"**tion8

2878 **2**o$e of **"**n individu**"**$ in conserv**"**tion of n**"**tur**"**$ resources **"**nd **4**revention of **4**o$$ution8

2888 E**B**uit**"7**$e use of resources for sust**"**in**"7**$e $ifest%$es8

2898 **/** is**"**ster #**"**n**"** e#ent f$oods9 e**"**rth **B**u**"?**es9 c%c$one **"**nd $**"**nds$ides8

&6 **;**ectures'

'0 E**5$%$8**y a**7**d E**5$**system **›**

3818 **/** efinition of eco$o %8

3828 Structure **"**nd function of **"**n ecos%ste#8

3838

!HARM-&+(+> !6arma5e2ti5a% Te567$%$8y !ra5ti5a%-II

' 6$2rs#=ee:

+0 To c"rr% out the tests for "$?"$init% on the iven in@ection cont"iners8

(0 1re4"r"tion of the fo$$o6in 1h"r#"co4oei"$ in@ections!

2818 A"ter for in@ection

2828 /extrose s"$ine in@ection

2838 1heno$ oi$% in@ection

2848 +scor7ic "cid in@ection

2858 1roc"ine "dren"$ine in@ection

2868 Eth"no$"#ine o$e"te in@ection

2878 ("$ciu# $ucon"te in@ection

2888 +#ino4h%$$ine in@ection

2898 Sodiu# 7ic"r7on"te in@ection

28108 Thi"#ine h%droch$oride in@ection

'0 To c"rr% out tests for steri$it% on different c$"sses of 4"renter"$ 4re4"r"tions!

3818 +Bueous in@ections! e8 8 A"ter for in@ection9 /extrose s"$ine in@ection8

3828 *i$% in@ections! e8 8 1heno$ oi$% in@ection

3838 ,n@ections cont"inin 7"ctericide! +scor7ic "cid in@ection9 1roc"ine "dren"$ine in@ection

3848 ,n@ections reBuirin su7 cu$turin !Eth"no$"#ine o$e"te in@ection9 ("$ciu# $ucon"te in@ection

!HARM-&+((> !6arma5e2ti5a% O1erati$7s !ra5ti5a%

' 6$2rs#=ee:

A0 !ri75i1%es $< !6arma5e2ti5a% O1erati$7s >

18 ;e"rnin to 4$ot on si#4$e9 se#i3$o "nd dou7$e $o r"4h 4"4ers "nd c"$cu$"tion of s$o4e in e"ch c"se8

Bac e or of P ar acy e ester yste

SEMESTER **C ;**

!HARM-**,*++›**	Medi**5**i**7**a% C**6**emistry **C**II
!HARM-**,*+(›**	Bi**$56**emistry
!HARM-**,*(+›**	**!6**arma**5**e**2**ti**5**a% Te**567$%$8**y-III

B$$:s Re5$mme7ded >

underst"ndin the #edicin"$ che#istr% in its #odern 4ers4ective!

18

B$$:s Re5$mme7ded >

18 2e#in ton9 The Science "nd 1r"ctice of 1h"r#"c%9 M"c? 1u7$ishin (o89 C8S8+8 &;"test Edition'8

28 ;8 ;"ch#"n9)8+8 ;ie7er#"n "nd =8;8 J"ni 9 The Theor% "nd 1r"ctice of ,ndustri"$ 1h"r#"c%9 ;eE "nd Fe7i er9 1hi$"de$4hi"9 C8S8+8 &;"test Edition'8

38 S8=8 ("rter9 /is4ensin for 1h"r#"ceutic"$ Students9 11th "nd 12th edition9 1967 "nd 19759 1it#"! Boo?

!HARM-,*((> Bi$%$8i5a% !6arma5y a7d Bi$te567$%$8y

' 6$2rs#=ee:

+0 Mi5r$3e-H$st I7tera5ti$7 >

The 4rocess of infection Sources "nd vectors of infection9 f"ctors inf$uencin infection8 &2 ;ectures'

(0 Imm27e Systems a7d Imm27$%$8i5a% !re1arati$7s >

2818 Structure "nd functions of 1M- "nd #ononuc$e"r &$%#4hoid' ce$$s such "s $%#4hoc%tes &T3ce$$s "nd B3ce$$s' "nd 4$"s#" ce$$s8

2828 -on3s4ecific host resist"nce9 n"tur"$ "nd s4ecific resist"nce9 #ech"nic"$9 che#ic"$ "nd ce$$u$"r #ech"nis#s of defence8 2o$e of 4h" oc%tic ce$$s throu h che#ot"xis #i r"tion9 in estion9 4h" oc%tosis "nd destruction of 7"cteri" throu h $%soso#"$ enG%#es8

2838)"e#o4oiesis "nd $%#4hoid or "ns9 ste# ce$$s "nd their differenti"tion9 7rief$% "7out #edic"$ "44$ic"tions of ste# ce$$s9 structure "nd functions of 4ri#"r% "nd second"r% $%#4hoid or "ns8

2848 +nti ens9 h"4tens9 i##uno $o7u$ins9 hu#or"$ "nd ce$$u$"r i##unit%9 M)("nti ens "nd T ce$$ rece4tor9 #ech"nis#s of "nti7od% for#"tion9 #onoc$on"$ "nti7odies9 "nti en3"nti7od% re"ction9 h%4ersensitivit%8

2858 +ctive34"ssive i##uniG"tion9 4re4"r"tion of v"ccines "nd seru#9 st"nd"rdiG"tion "nd stor" e8 Brief$% "7out ne6 trends in v"ccine deve$o4#ent8 &15 ;ectures'

'0 ;ir2ses >

($"ssific"tion9 structure9 #ethods of their re4$ic"tion9 4heno#enon of vir"$ interference "nd interferons9 4h" es "nd their #u$ti4$ic"tion9 $%so en% "nd $%so enic conversion8 &2 ;ectures'

&0 @e7eti5 Re5$m3i7ati$7 >

,ntroduction to enes9 tr"nsfor#"tion9 con@u "tion9 tr"nsduction9 reco#7in"nt /-+ too$s & ene c$onin '8 ,ntroduction to 4o$%#er"se ch"in re"ction9 ene ther"4% "nd ene de$iver% s%ste#8 &6 ;ectures'

,0 Ferme7tati$7 Te567$%$8y >

B"tch9 fed 7"tch "nd continuous fer#ent"tion 7iore"ctors9 fer#enter "nd its desi n9 contro$ of different 4"r"#eters in fer#ent"tion 4rocess9 use of #ut" enic " ents9 desi n of the fer#ent"tion 4rocess9 iso$"tion of fer#ent"tion 4roducts 6ith s4eci"$ reference to 4enici$ins9 stre4to#%cin9 tetr"c%c$ines "nd vit"#in B_{12}8 &4 ;ectures'

/0 Mi**5**r**$3**ia% Tra**7**s**<$**rmati**$7 >**

,ntroduction9 t%**4**es of re**"**ctions **#**edi**"**ted **7**% **#**icroor **"**nis**#**s9 desi n of **7**iotr**"**nsfor**#"**tion **4**rocesses9 se$ection of or **"**nis**#**s9 **7**iotr**"**nsfor**#"**tion **4**rocesses **"**nd its i**#4**rove**#**ent **6**ith s**4**eci**"$** reference to corticosteroids8

&4 **;**ectures'

.0 Imm**$3**i%i**D**ati**$7** Te**567$%$8**y **>**

Techni**B**ues of i**# #**o**7**i$i**G"**tion of en**G**%**#**es9 f**"**ctors **"**ffectin en**G**%**#**e **?**inetics9 **7"**cteri**"$** en**G**%**#**es such **"**s h%**"$**uronid**"**se9 **4**enici$$in**"**se9 stre**4**to**?**in**"**se9 stre**4**todorn**"**se9 **"#**%**$"**ses **"**nd **4**rote**"**ses9 **,# #**o**7**i**$i**G**"**tion of **7"**cteri**" "**nd **4$"**nt ce$$s8

&5 **;**ectures'

-0 Bi**$**te**567$%$8**y **>**

,ntroduction9 **7**iotechno$o % dru s9 **"**ntisense nuc$eotides9 **4**h**"**r**#"**co nostic**"$ "44$**ic**"**tions9

!HARM-,*&+› !6arma5$%$8y-II

' 6$2rs#=ee:

18

!HARM-,++(> Bi$56emistry !ra5ti5a%

' 6$2rs#=ee:

18

!HARM-**,+&+>** **!6**arma**5$%$8**y **!**ra**5**ti**5**a%-II

' 6$2rs#**=**ee**:**

1. **("**rdi**"**c **1**h**"**r**#"**co$o **%! 2**ecordin **D** inter**4**ret**"**tion of c**"**rdi**"**c function in hu**#"**n vo$unteers such **"**s E**(.**
2. **2**es**4**ir**"**tor% **1**h**"**r**#"**co$o **%! 2**ecordin **D** inter**4**ret**"**tion of **4**u$**#**on**"**r% functions in hu**#"**n vo$unteers
3. **/** e**#**onstr**"**tion **"**nd co**#4**uter si**#**u$**"**tion ex**4**eri**#**ent on the **(**oncentr**"**tion **2**es**4**onse **(**urve **&(2('** of se$ected dru s usin iso$**"**ted **#**usc$e **4**re**4"r"**tions
4. Bioche**#**ic**"$** ex**4**eri**#**ents for **7**ood $ucose **"**nd $%cos%$**"**ted h**"**e**#**o $o**7**in **&)7+**$_{1}$**('**
5. To stud% the c$inic**"$ #"**nu**"$**s **"**s **4**er the s%$$**"7**us

B**$$:**s Re**5$**mme**7**ded **>**

1. **A"$?**er **2**9 Ed**6"**rds **(**8 **(**$inic**"$ 1**h**"r#"**c% **"**nd Ther**"4**eutics8 **(**hurchi$$ **;**ivin stone9 **;**ondon8 **;"**test Edition8
2. **J**u$**?"**rni S8**J**8 **)"**nd**7**oo**?** of Ex**4**eri**#**ent**"$ 1**h**"r#"**co$o **%8 :"$$"7**h **1**r**"?"**sh**"**n9 **-** e**6 /** e$hi8 **;"**test Edition8
3. Sh**"**r e$ **;**9 Soune% **1**F9 Mutnic**? +) "**nd S**6"**nson **;-**8 **(**o**#4**rehensive **1**h**"**r**#"**c% **2**evie**6**8 **A**o$ters **J**u$**6**er9 **;**i**44**incott **A**i$$i**"55(**v**)5.**8**74655(**v**)5.**8**77024**o

SEMESTER C ; I

!HARM-/*++>	!6arma5e2ti5a% A7a%ysis-II
!HARM-/*+(>	Medi5i7a% C6emistry-III
!HARM-/*(+>	C$smet$%$8y
!HARM-/*((>	!6arma5e2ti5a% ?2ris1r2de75e
!HARM-/*'+>	!6arma5$87$sy-I ;
!HARM-/*&+>	!6arma5$%$8y-III
!HARM-/+++>	!6arma5e2ti5a% A7a%ysis !ra5ti5a% -II
!HARM-/++(>	Medi5i7a% C6emistry !ra5ti5a%-III
!HARM-/+(+>	C$smet$%$8y !ra5ti5a%
!HARM-/+'+>	!6arma5$87$sy !ra5ti5a%-I ;
!HARM-/+&+>	!6arma5$%$8y !ra5ti5a%-III

!HARM-/*++>	!6arma5e2ti5a% A7a%ysis-II

' 6$2rs#=ee:

+0 N$7-aE2e$2s Titrati$7s >

Theoretic"$ consider"tion9 sco4e "nd $i#it"tions9 "cid 7"se eBui$i7ri" in non3 "Bueous #edi"9 titr"tion of 6e"? 7"ses9 titr"tion of 6e"? "cids9 indic"tors9 4h"r#"ceutic"$ 4roducts shou$d 7e se$ected for i$$ustr"tion9 "44$ic"tions8

&4 ;ectures'

(0 C$m1%e9$metri5 Titrati$7s >

(once4t of co#4$ex"tion "nd che$"tion9 AernerLs coordin"tion nu#7er "nd e$ectronic structure of co#4$ex ions9 st"7i$it% const"nts9 titr"tion curves9 #"s?in "nd de#"s?in " ents9 t%4es of co#4$exo#etric titr"tions9 #et"$ ion indic"tors9 f"ctors inf$uencin the st"7i$it% of co#4$exes9 "44$ic"tions8

&4 ;ectures'

'0 Mis5e%%a7e$2s Met6$ds $< A7a%ysis >

/i"GotiG"tion titr"tions9 J@e$d"h$ nitro en deter#in"tion9 J"r$3Fischer titr"tion9 *x% en f$"s? co#7ustion8

&4 ;ectures'

Meta3$%ite A7ta8$7ism

B"sic conce4ts9 "ctive site directed irreversi7$e enG%#e inhi7itors9 #ech"nis# 7"sed enG%#e inhi7itors9 dih%drofo$"te s%nthet"se inhi7itors9 dih%drofo$"te reduct"se inhi7itors9 "#ino "cid "nt" onists9 "nt" onists directed " "inst nuc$eic "cids9 &33$"ct"#"se inhi7itors'8

&3 ;ectures'

(0 The fo$$o6in to4ics sh"$$ 7e tre"ted coverin che#ic"$ n"#in 9 structure "ctivit% re$"tionshi4 &S+2'9 4h%sicoche#ic"$ "nd stereo "s4ects9 #ode of "ction &6herever "44$ic"7$e' "nd uses8 The e#4h"sis 6ou$d 7e on$% on B818 "nd =818 co#4ounds8 S%nthesis of on$% those dru s iven in 4"rentheses under e"ch to4ic 6ou$d 7e covered0

2818 Su$4hon"#ides ! /eve$o4#ent no#enc$"ture "nd c$"ssific"tion9 "nti#icro7i"$ s4ectru#9 dru resist"nce9 s%ner is# 6ith dih%drofo$"te reduct"ste inhi7itors9 toxicit% "nd side effects9 reduction of cr%st"$uri"9 4h%sicoche#ic"$ 4ro4erties "nd 7io$o ic"$ "ctivit%9 #et"7o$is#9 su$4h"#ides "nd tri#etho4ri# co#7in"tion &Su$4h"ni$"#ide9 Su$4h"cet"#ide9 Su$4h"di"Gine9 Su$4h"di#ethoxine9 Su$4h"#eth"Go$e "nd Su$4h"#ethox"Go$e'8

&4 ;ectures'

2828 +nti7iotics! ($"ssific"tion 3 c%c$oserine9 &ch$or"#4henico$'F 7ios%nthetic 4enici$$ins! 7enG%$ 4enici$$in9 4roc"ine 4enici$$in9 4henox%#eth%$ 4enici$$inF se#is%nthetic 4enici$$in! 4henethici$$in9 c$ox"ci$$in9 "#4ici$$in9 "#ox%ci$$inF ce4h"$os4orins! ce4h"$exin9 cef"droxi$9 &cef"$othin'9 cefuroxi#eF 4o$%4e4tides! 7"citr"cin9 4o$%#ixin B9 c"4reo#%cinF "#ino $%cosides! stre4to#%cin9 neo#%cin9 ?"n"#%cin9 ent"#icinF tetr"c%c$ines! ch$ortetr"c%c$ine9 ox%tetr"c%c$ine9 dox%c%c$ineF erth%ro#%cinF novo7iocinF v"nco#%cinF rif"#4icin8

&7 ;ectures'

283 +nti#%co7"cteri"$ " ents! ,ntroduction to #%co7"cteriu#9 deve$o4#ent of "nti#%co7"cteriu# " ents "nd their use in ther"4euticsF "ntitu7ercu$"r dru s &,sonicotinic"cid h%dr"Gide9 4"r" +#inos"$ic%$ic "cid9 1%r"Gin"#ide "nd Ethion"#ideF "nti$e4rotic dru s& /"4sone9 su$foxone sodiu#'

&2 ;ectures'

284 +nti#"$"ri"$s! Iuino$ine "nd "n"$o ues9 83"#ino Buino$ines9 93"#ino "cridines9 43 "#inoBuino$ines9 di"#ino4%ri#idine9 "nd 7i u"nides &1ri#"Buin9 Me4"crine9 (h$oroBuin "nd 1%ri#eth"#ine'8

&4 ;ectures'

2858 +nti"#oe7ic " ents! E#etine h%droch$oride9 Buino$ine deriv"tives9 #et"$ free su7st"ncesF di$ox"nide furo"te9 #etronid"Go$e9 or "no#et"$$ic co#4ounds9

!HARM-**/*(+›** C**$**smet**$%$8**y

' 6$2rs#**=**ee**:**

+0 Se**7**siti**B**ity Testi**78 ›**

/i**"** nostic Sensitivit% Testin **!** Techni**B**ues for **7**oth covered **"**nd uncovered **4"**tch tests9 inter**4**ret**"**tion of **4"**tch test9 **4"**tch testin **6**ith n**"**i$ $**"**c**B**uers9 $i**4**stic**?**s9 $**"**no$in **"**nd h**"**ir d%es8 **1**hotosensitivit% testin of cos**#**etics8

1redictive Sensitivit% Testin **›** Testin of hu**#"**ns for irrit**"**nc%9 **4**redictive testin for **"$$**er ic cont**"**ct sensiti**G"**tion **"**nd **4**hotosensiti**G"**tion c**"4"**cit%8

&10 **;**ectures**'**

(0 Basi**5** S**:**i**7** Care **!**r**$**d**25**ts **›**

Ethnic s**?**in **"**nd its cos**#**etic re**B**uire**#**ent8 **(**$e**"**nsin **4**roducts9 s**?**in toners9 e**#**o$$ients9 **#**oisturi**G**ers9 co$d cre**"#**s9 v**"**nishin cre**"#**s9 h**"**nd **"**nd **7**od% cre**"#**s **"**nd $otions9 hor**#**one

B$$:s Re5$mme7ded›

1. 2e#in ton! The Science "nd 1r"ctice of 1h"r#"c%9 M"c? 1u7$ishin (o89 C8S8+8&;"test Edition'8
2. 1oucherls 4erfu#es9 (os#etics "nd So"4s9 :o$8 3 &(os#etics'9 9th edition9 19928
3. M8S8 B"$s"# "nd E8 S" "rin9 (os#etics! Science "nd Techno$o %9 :o$8 1339 2nd edition9 19749 Ai$e% ,nterscience9 -8 K8

!HARM-/*((› !6arma5e2ti5a% ?2ris1r2de75e

(6$2rs#=ee:

1. 1h"r#"c% +ct 1948 &6 ;ectures'
2. /ru s "nd (os#etic +ct 1940 "nd ru$es #"de thereunder8 &8 ;ectures'
3. The -"rcotic /ru s "nd 1s%chotro4ic Su7st"nces +ct9 1985 "nd ru$es #"de there under8 &4 ;ectures'
4. Medicin"$ "nd Toi$et 4re4"r"tion &excise duties' +ct "nd ru$es #"de there under8 &5 ;ectures'
5. /ru s "nd M" ic 2e#edies &*7@ection"7$e +dvertise#ents' +ct8 &6 ;ectures'
6. The /ru &1rice (ontro$' *rder8 &4 ;ectures'
7. 1h"r#"ceutic"$ Ethics8 &3 ;ectures'

B$$:s Re5$mme7ded›

1. B8M8 Mith"$9 Text Boo? of Forensic 1h"r#"c%9 -"tion"$ Boo? (entre9 /r8 Sund"ri Moh"n +venue9 ("$cutt" &;"test Edition'8
2. -8J="in9 + Text Boo? of Forensic 1h"r#"c%9 :"$$"7h 1r"?"sh"n9 -e6 /e$hi &;"test Edition'8
3. 2e$ev"nt +cts "nd 2u$es 4u7$ished 7% The .overn#ent of ,ndi" &;"test Edition'8

!HARM-**/*'+>** **!6**arma**5$87$**sy - l**;**

' 6$2rs#**=**ee**:**

18 **;$**%ati%e Oi%s>

1818 **/**ifferent #ethods of essenti"$ oi$ extr"ction

&2 **;**ectures'

1828 Bio$o ic"$ sources9 che#ic"$ constituents "nd uses of the fo$$o**6**in dru s!

Menth"9 S**4**e"r#int9 *r"n e **4**ee$9 **(**inn"#on9 **-**ut#e 9 **(**"rd"#o#9 Fenne$9 **/**i$$9 **(**$ove9 Euc"$%**4**tus9 **1**ine9 **;**e#on r"ss9 **:**etiver9 **.**er"niu#9 **2**ose9 S"nd"$**6**ood8

&8 **;**ectures'

28 **,**ntroduction to different c$"sses of **4$"**nt ro**6**th re u$"tors "nd their **4**h%sio$o ic"$ ro$e8

&6 **;**ectures'

38 **1$"**nt3 derived insecticides8 &7 **;**ectures'

48 **,**ntroduction to edi**7$**e v"ccines "nd **7**ioenh"ncers8 &1 **;**ecture'

58 **,**ntroduction "nd si nific"nce of n"tur"$ "ntioxid"nts &**6**ith reference to **:**it8 **(**9 toco**4**hero$9 f$"vonoids inc$udin te" c"techins'8 &3 **;**ectures'

68 **,**ntroduction to **4**h%to**4**h"r#"ceutic"$s **6**ith s**4**eci"$ reference to nutr"ceutic"$s "nd cos#eceutic"$s8 &2 **;**ectures'

78 **/**escri**4**tion of co# #on ter#s re$"ted to #edicin"$ **4$"**nts e8 8 tr"dition"$ #edicin"$ **4$"**nts9 indi enous dru s9 fo$?$ore #edicine9 **7**ot"nic"$s9 her**7"**$ dru s9 ethno**4**h"r#"co$o %9 **4**h%to#edicine8 &1 **;**ecture'

88 De<i**7**iti**$7**s **$<** Bari**$2**s Ay**2**r**B**edi**5** <**$**rm**2**%ati**$7**s>

+s"v"s **D +**rist"s9 **+**r?"9 **+**v"$eh" **D 1"?"9 (**urn"9 T"i$"9 **.**hrit"9 **/**r"v"?"9 **;**e**4"9 :**"ti **D .**uti?"9 **:**"rti3**-**et"r**7**indu **D +**n@"n"9 S"ttv"9 **1**"r**4"**ti9 **1**isti9 Bh"s#"8

&2 **;**ectures'

98 St**2**dy **< 3**ta**7**i**5**a% s**$2**r**5**es i**75%2**di**78** a%ter**7**ati**B**e **5$7**tr**$B**ersia% s**$2**r**5**esA **56**emi**5**a% **5$7**stit**2**e**7**ts a**7**d t**6**era**1**e**2**ti**5 2**ses **$<** t**6**e <**$%%$=**i**78** i**7**di**8**e**7$2**s traditi**$7**a% dr**28**s>

+#$"9 B"her"9 **)**"r"d9 **+**sh**6" "**ndh"9 B"**7**chi9 Br"h#i9 **:**"s"**?"9** Tu$si9 Sh"t"v"ri9 Sh"n?h**4**ush**4**i9 **J**ut"?i9 **J"$#**e h9 **.**o?hru9 **(**hir"t"9 **+**sho?"9 **="t"#"**nsi9 **.**i$o9 M"ric"9 T" "r9 **.**u u$u9 **)**"ridr"9 **/**"ruh"ridr"9 **-**i**#7"9 :**i@"%"s"r9 Methi8

&8 **;**ectures'

B$$:s Re5$mme7ded >

1. :8E8 T%$er9 ;828 Br"d% D =8 E8 2o77ers9 1h"r#"co nos%9 J8 M8 :"r hese (o#4"n%9 Bo#7"%9 ,ndi"9 9th Edition 19888

2. A8 (8 Ev"ns9 Tre"se "nd Ev"nsL 1h"r#"co nos%9 A8B8 S"unders ;i#ited9 16th Edition9 20098

3. T8 E8 A"$is9 Text Boo? of 1h"r#"co nos%9 = D + (hurchi$$;td9 ;ondon9 5th Edition9 1967 or "v"i$"7$e re4rints8

4. +%urvedic 1h"r#"co4oei" of ,ndi" &different vo$u#es'

5.

B$$:s Re5$mme7ded›

1. F. M"nn "nd B(S"unders 1r"ctic"$ *r "nic (he#istr% 9 *rient ;on #"n ;i#ited 9)%der"7"d9 ;"test Edition.

2. B.S. Furniss9 +. =.)"nn"ford9 1.A.. S#ith9 +.2. T"tche$$. :o e$s.s Text7oo? of 1r"ctic"$ *r "nic (he#istr%. 1e"rson Educ"tion ;i#ited9 Sin "4ore &;"test edition'.

!HARM-/+(+› C$smet$%$8y !ra5ti5a%

' 6$2rs#=ee:

1re4"r"tion of cos#etic for#u$"tions such "s co$d "nd v"nishin cre"#s9 "$$ 4ur4ose cre"#s9 e#o$$ient cre"#s "nd $otions9 h"nd cre"# "nd $otion9 dee4 c$e"nsin #i$?9 #oisturiGin cre"# "nd $otion9 f"ce 4o6der9 t"$cu# 4o6der9 n"i$ $"cBuer re#over9 n"i$ en"#e$9 $i4stic?s9 "nti4ers4ir"nts "nd deodor"nt 4re4"r"tions9 tooth4"stes9 sh"#4oos9 h"ir oi$9 sh"vin cre"#s "nd "fter sh"ve 4re4"r"tions.

!HARM-/+'+› !6arma5$87$sy !ra5ti5a%-I;

'J+ (T2t$ria%) 6$2rs#=ee:

1. Extr"ction of vo$"ti$e oi$s studied in theor% "nd their chro#"to r"4hic studies.

2. +uthentic"tion "nd st"nd"rdiG"tion of crude dru s covered in theor% 7"sed on or "no$e4tic "nd #icrosco4ic ch"r"cters.

3. .ross identific"tion of crude dru s.

B$$:s Re5$mme7ded›

1. A. (. Ev"ns9 Tre"se "nd Ev"ns. 1h"r#"co nos%9 A.B. S"unders ;i#ited9 16th Edition9 2009.

2. T. E. [illegible]

!HARM-**/+&+›** **!6**arma**5$%$8**y **!**ra**5**ti**5**a%-III

' 6$2rs#**=**ee**:**

1**8** Bi**$**assays **›**

Stud% of v**"**rious **7**io**"**ss**"**% desi ns usin v**"**rious iso**$"**ted **4**re**4"**r**"**tions &r**"**t co$on9 fundus **"**nd uterus**'8**

2**8** E**91**erime**7**ta% T**$9**i**5$%$8**y **›**

"8 **(**"cu**"**tion of **;/** 50 v**"$**ues **"**nd ther**"4**eutic index &st**"**tistic**"$ "44**ro**"**ch**' 7**% v**"**rious **#**ethods**8**

78 **/**eter**#**in**"**tion of ren**"$ "**nd $iver function tests**8**

3**8** **+**n**"$%**sis of s%$$**"7**us **7"**sed c$inic**"$ 4**ro**7$**e**#s8**

B**$$:**s Re**5$**mme**7**ded**›**

1**8**

Bac e or of P ar acy e ester yste

SEMESTER C ; II

!HARM-.*++>	!6arma5e2ti5a% A7a%ysis-III
!HARM-.*(+>	!6arma5e2ti5a% Te567$%$8y-I;
!HARM-.*((>	!6arma5$:i7eti5s a7d Bi$16arma5e2ti5s-I
!HARM-.*'+>	!6arma5$87$sy-;
!HARM-.*&+>	!6arma5$%$8y-I;
!HARM-.+++>	!6arma5e2ti5a% A7a%ysis !ra5ti5a% CIII
!HARM-.+(+>	!6arma5e2ti5a% Te567$%$8y !ra5ti5a%-I;
!HARM-.+'+>	!6arma5$87$sy !ra5ti5a%-;
!HARM-.+&+	!6arma5$%$8y !ra5ti5a%-I;

Bac e or of P ar acy e ester yste

)0

!HARM-.*((> !6arma5$:i7eti5s a7d Bi$16arma5e2ti5s- I

(6$2rs#=ee:

+0 I7tr$d25ti$7 to 4h"r#"co?inetics "nd 7io4h"r#"ceutics inc$udin their ro$e in the re$"ted disci4$ines8 &2 ;ectures'

(0 !6arma5$:i7eti5s>

Si nific"nce of 4$"s#" dru eve ti#e 4rofi$e

2818 C$m1artme7t m$de%s

1h"r#"co?inetic #ode$s9 7"sics of co#4"rt#ent"$ #ode$in inc$udin nu#eric "44$ic"tions &6herever 4ossi7$e' of!

281818 *ne co#4"rt#ent o4en 7od% #ode$ &13(BM'9 4h"r#"co?inetics of sin $e dose "d#inistr"tion fo$$o6in intr"venous &r"4id'9 or"$ "nd intr"venous tr"nsfusion "d#inistr"tion9 A" ner -e$son #ethod "nd #ethod of residu"$s &stri44in ' "s "44$ied to 4$"s#" concentr"tion 4rofi$es fo$$o6in or"$ int"?e9 :o$u#e of distri7ution9 Bio$o ic"$ h"$f3$ife "nd ($e"r"nce8

281828 Mu$ti4$e dose ?inetics fo$$o6in intr"venous &r"4id' "nd or"$ "d#inistr"tion9 su4er4osition 4rinci4$e9 ste"d% st"te ?inetics8

281838 Crin"r% excretion9 #erits "nd shortco#in s9 Si #"3#inus 4$ot9 #ethod of residu"$s "s "44$ied to cu#u$"tive "nd r"te of excretion curves8

281848 T6o co#4"rt#ent o4en 7od% #ode$ &23(BM'9 4h"r#"co?inetics of sin $e dose "d#inistr"tion "s "44$ied to intr"venous &r"4id' "d#inistr"tion9 #ethod of residu"$s "s "44$ied to 4$"s#" concentr"tion 4rofi$es fo$$o6in intr"venous &r"4id' "d#inistr"tion8

281858 1h"r#"co?inetic 7"sis of contro$$ed dru de$iver% &26 ;ectures'

2828 Tre7ds i7 !6arma5$:i7eti5s

-onco#4"rt#ent"$ 4h"r#"co?inetic conce4t usin st"tistic"$ #o#ents8 &2 ;ectures'

B$$:s Re5$mme7ded>

18 A8+8 2itsche$9)"nd7oo? of B"sic 1h"r#"co?inetics9 /ru ,nte$$i ence9)"#i$ton9 ;"test Edition8

28 =8.8 A" ner9 Fund"#ent"$s of (he#ic"$ 1h"r#"co?inetics9 /ru ,nte$$i ence9)"#i$ton9 ;"test Edition8

38 +8 .enn"ro &ed8'9 2e#in ton! The Science "nd 1r"ctice of 1h"r#"c%9 M"c? 1u7$ishin (o#4"n%9 1enns%$v"ni"9 ;"test Edition8

48 Sh"r e$9 ;8 "nd Ku9 +89 +44$ied Bio4h"r#"ceutics "nd 1h"r#"co?inetics9 +44$eton "nd ;"r e9 -or6"$?9 ;"test Edition8

58 M8.i7"$di "nd /81errier9 1h"r#"co?inetics9 =8 S6"r7ric? ed89 M"rce$ /e??er9 ;"test Edition8

!HARM-**.*&+›** **!6**arma**5$%$8**y-I**;**

' 6$2rs#**=**ee**:**

1ß **(**$inic**"**$ **1**h**"**r**#"**co$o %**!** **/**efinition9 conce**4**t **"**nd sco**4**e of c$inic**"**$ **4**h**"**r**#"**co$o %ß **2**o$e of **4**h**"**r**#"**cist in he**"**$th c**"**re s%ste**#** **"**nd **4**h**"**r**#"**covi i$**"**nceß

&4 **;**ectures**'**

2ß

!HARM-.+&+ !6arma5$%$8y !ra5ti5a%-I;

(J+ (T2t$ria%) 6$2rs#=ee:

18 C%i7i5a% !6arma5$%$8y >

"8

SEMESTER C ; III

!HARM--*++>	Medi5i7a% C6emistry Cl ;
!HARM--*(+>	!6arma5e2ti5a% Te567$%$8y- ;
!HARM--*((>	!6arma5$:i7eti5s a7d Bi$16arma5e2ti5s- II
!HARM--*('>	C%i7i5a% !6arma5y
!HARM--*'+>	!6arma5$87$sy- ; I
!HARM--+++>	Medi5i7a% C6emistry !ra5ti5a% Cl ;
!HARM--+(+>	!6arma5$:i7eti5sA Bi$16arma5e2ti5s a7d C%i7i5a% !6arma5y !ra5ti5a%
!HARM--+'+>	!6arma5$87$sy !ra5ti5a%- ; I

!HARM--*++>	Medi5i7a% C6emistry -I ;

& 6$2rs#=ee:

The che#ic"$ n"#in "nd uss3 !6usss

e

e

e&67(e)u9227 3 . 39 8 . ss1(1883-0.)2. . 9x3u0 . 4159 46 t((#)60v23324 . 5114-1 . 3)55cecx960558 5 . 53 . 40938(

e

e

(0 I 2a%ity Ass**2**ra**75**e >

I u**"**$it% **"**ssur**"**nce s%ste**#**s9 **2"6 #"**teri**"**$ **B**u**"**$it% **"**ssur**"**nce **#**ono r**"4**hs9 Before st**"**rt chec**?**in 9 in **4**rocess contro$s9 **B**u**"**$it% **"**ssur**"**nce durin **4"**c**?"** in F **(**once**4**t of st**"**tistic**"**$ **B**u**"**$it% contro$9 S**" #4**$in **4$"**ns **<** sin $e9 dou**7**$e **"**nd **#**u$ti**4**$e8

&5 **;**ectures'

'0 ! i%**$**t **!**%a**7**t S**5**a%e-**21** Te**567**i**E2**es **!**

!HARM--*((> !6arma5$:i7eti5s a7d Bi$16arma5e2ti5s- II

(6$2rs#=ee:

+0

!HARM--*(' > C%i7i5a% !6arma5y

' 6$2rs#=ee:

+0

!HARM--*'+> !6arma5$87$sy-;I

' 6$2rs#=ee:

+0 2"6 #"teri"$ of 4$"nt dru s for 4h%to4h"r#"ceutic"$ industr%!

1818 1rocure#ent "nd su44$% ch"nne$s of 4$"nt dru #"teri"$! Throu h cu$tiv"tion9 contr"ct f"r#in 9 6i$d co$$ections9 co##erci"$ #"r?et sources9 tr"ders "nd 7ro?ers8

&1 ;ecture'

1828 +uthentic"tion of 4$"nt dru #"teri"$! Throu h co#4"rison 6ith reference s"#4$es9 ross #or4ho$o %"nd di" nostic #icrosco4ic ch"r"cters8

&2 ;ectures'

1838 c68-5.0390 6(i)-0'

!HARM--+'+› !6arma5$87$sy !ra5ti5a%-;l

'J+ (T2t$ria%) 6$2rs#=ee:

18 ,so$"tion of so#e se$ected 4h%toconstituents viG8 c