B.Sc. Chemistry Programme under CBCS

(For candidates admitted from the academic year 2016-2019 onwards)

SYLLABUS

DEPARTMENT OF CHEMISTRY
(DST-FIST Sponsored Department)
NATIONAL COLLEGE *(Autonomous)*
(Nationally Accredited at 'A' Level by NAAC)
FEBRUARY 2016,Tiruchirappalli 620 001

jkohaTjJiw› Njrhaffy Y}uh (jddhlrh)› jhUrruhggsss – 1.

Kjw gUtk

jhs: nkhohgghlk - 1 nraAs (,ffhyk)› ciueil› rhWfij› ,yffhatuyhW

U16T1

fwghfFk fhyk: 6 kzh **jugGsshfs: 3**

myF 1: ghujhahu - gukynghUs thojJ
ghujhjhrd - eqfNs nrhyYqfs
ftkzh - Nfhthy tohghL
glLfNfhlilahu - xzzhahUffZk mzzhrrh
ehkffyyhu - Rjejhuk ahJ?

myF 2: fzzjhrd - NtzLk NtzLk
thyh - Gddif kddd
ituKjJ - ghujh eidffggLfwhd
K.Nkjjh - RtUk geJk
mgJy uFkhd - jtwhd vz

myF 3: **ciueil:**

1. gukgiufFzk - c.Nt.rh
2. fyth - ahogghzk nghddkgyggh sis
3. ,yffhaKk r%fKk - v].itahGuhggh sis
4. fiyAk fwgidAk - uh.ghNrJggh sis
5. Fws fhlLk newh - fh.M.ng.thRtehjk
6. ,awiff fhlrhfs - fh.th.[feehjd
7. rka ,yffhaqfshy mwnewh - FdwfFb mbfshu

myF 4: **rhWfij:**

1. jeijAk kfDk - fyfh
2. flTSk fejrhkhggh sisAk - GJikggh jjd
3. ejhgjh tffyhdhu - mzzhJiu
4. Kjyghby - e.ghrr%ujjh
5. fhfhj cwT - R.rKjjhuk
6. kNdhghtk - tyyhfzzd
7. kdhjaejhuk - thejd
8. grirffdT - yh.r. uhkhkhujk

myF 5: tyyhdk khFk ,lqfs› tyyhdk khfh ,lqfs
,yffha tuyhW (trdfthij› GJfftij› ciueil› rhWfij klLk)

ghlE}y: jkho - KjwgUtk - Njrhaffy Y}uh nthsaL
,yffhatuyhW - Njrhaffy Y}uh nthsaL

jkohaTjJiw› NjraffyY}u (jddhlr)› jUrruhggss – 1.

,uzlhk gUtk

jhs: nkhogghlk - 2 nraAs (gfj mw ,yffaqfs)› Gjdk› ,yffa tuyhW.

U16T2

fwgfFk fhyk: 6 kz **jugGssfs: 3**

myF 1: jUQhdrkgeju - jUthidffh gjfk - kioahu klwhkO thS ilaha..

jUehTffuru - tlk jujj gjfk - xdW nfhyhk mtu reijAautiu

nguahothu - jUtuqfk ghRuk 2 - kutbiaj jkgfF

FyNrfuu - tjJtf NfhIL mkkhid Ntzb ewwy - jUJauk....10

myF 2: tssyhu - jUtUlgh - ngwhgNgW - Mth vdwid MlnfhzlUs..10

jhAkhdtu - gdkhiy - gdkhiy jusUff...9

,NaRfhtak - ctik to nraj - flNyhuk xUehs VR edwhu..

FzqFb k] jhd - euhkaffzz – 1-25 fzzfs

myF 3: ehdkzffbif: (ghly vzfs: 6› 10› 12› 16› 31› 38› 45› 56› 69› 75)

ehybahu: (ghly vzfs: 2› 29› 35› 77› 95› 109› 114› 172› 248› 269)

rWgQr%yk: (ghly vzfs: 9› 12› 16› 26› 32› 39› 63› 82› 85› 90)

,dait ehwgJ: Kjy gjJ ghlyfs.

myF 4: Gjdk - fddfh - uFehjd Jiw ntsaL

myF 5: ,yffa tuyhW (irtk›itztk›rkzk›ngsjjk›fwjJtk› Kfkjak kwWk Gjdk gwwad klLk)

ghlE}y: jko - ,uzlhkgUtk - NjraffyY}u ntsaL.

fddfh - rij gjggf ntsaL› nrdid.

,yffatuyhW - NjraffyY}u ntsaL.

jkohaTjJiw› NjraffyY}u (jddhlr)› jUrruhggss – 1. %dwhk gUtk

jhs: nkhoggh lk - 3 nraAs (fhggak)› ehlfk› ,yffatuyhW

U16T3

fwgfFk fhyk: 6 kz **jugGssfs: 3**

myF 1: ryggjfhuk - euggil fhij
kzNkfiy - ghjjuk ngww fhij

myF 2: fkguhkhazk - Ajj fhzlk - ,ejurjJ tijgglyk
nguaGuhzk - fz zgg ehadhu Guhzk

myF 3: Njkghtz - tsd rdjj glyk
rwhgGuhzk - khDfFg giz edw glyk
ghQrhy rgjk - #jhllr rUffk

myF 4: ehlfk: xjjif – m. ,uhkrhk (vdrgvr. ntsaL)

myF 5: ,yffa tuyhW (fhggak› Guhzk› ehlfk gwwad klLk)

ghlE}y: jko - %dwhkgUtk - NjraffyY}u ntsaL.
xjjif – m. ,uhkrhk (vdrgvr. ntsaL)
,yffatuyhW - NjraffyY}u ntsaL.

jk;ohaTjJiw> Njr;affyY}u; (jddhlr;)> j;Urr;uhggss; – 1. ehdfhk gUtk

jhs: nkho;gghlk - 4 nraAs (gzila ,yff;ak> ,yff;atuyhW> nkho;ngaugG)

U16T4

fwg;fFk fhyk: 6 kz; **jugGss;fs: 3**

myF 1:

ewwpiz: 1. Ntu g;z; ntj;ujJ – ghiy - ,sqfudhu
2. r;yUk gyUk filffz - neajy - cNyhrrdhu
3. mu;fhy khw;a mk fz - kUjk k;isff;ohdeyNtlldhu
4. ,iy ,y g;ltk-Kyiy - t;offlNgijg ngUqfz zdhu
5. Gjytd <dw G+qfz - Fw;Qr;

FWenjhif :1. nfhqF Nju thofif - Fw;Qr; - ,iwadhu
2. ,bfFq Nfs;u - Fw;Qr; - ntss;tj;ahu
3. ahuzqFwwid flNy - neajy - mk%tdhu
4. khu; ahkgydd - neajy - Fdw;adhu
5. ckzu NrueJ fo;ej kUqf;d - ghiy - ngUqfLqNfh
6. Mlik GiuAk - ghiy - XNuUotdhu
7. Ks;ja;u g;irej - Kyiy - $lY}u f;ohu
8. ,sik ghuhu - Kyiy - xf$u khrhjj;ahu
9. Ntkg;d igqfha - kUjk - k;isffejdhu

myF 2:

mfehD}W: 1. gidjj;us mdd - Fw;Qr; - guzu
2. girgL grir - Kyiy - kJiu kssdhu
3. ,kik cyfjJ ,irnahLk - kUjk - nryY}ufNfhr;fd
4. j;iucoeJ mir,a - neajy - cNyhrrdhu
5. ms;e;iy nghwhmJ mku;a – ghiy - ngUqfLqNfh

fy;jnjhif: 1. RlujnjhB, Nfsha - Fw;Qr;
2. fhu Mug ngaj fb nfhs - Kyiy
3. tqF eu mt;o eyk gfutu - kUjk
4. khkyu Kzlfk - neajy
5. mujha mwndaj; - ghiy

myF 3:

GwehD}W : 1. xUehl nryyyk - ghlhz - xsitahu
2. gilgGggy giljJ - nghJt;ay - mw;Tilekg;
3. ,isNahu #lhu - nghJt;ay - Fltha;y fujjdhu
4. gyrhdwNu - nghJt;ay - eu;nt&cj jiyahu
5. fhaney mWjJfftsq nfhs;Nd - ghlhz - g;r;uheijahu

j;UfFws: 1. mwd ty;AWjjy> 2.gzGilik> 3. xOffKilik>
4. thaik> 5. Co> 6.nrhytdik

myF 4: KyiygghlL KOikAk

myF 5: ,yff;atuyhW (gj;ndz Nkwfz fF> foffz fF)> nkho;ngaugG> nghJfflLiu

ghlE}y: 1. jk;o - ehdfhkgUtk - Njr;affyY}u; ntsaL.
2. ,yff;atuyhW - Njr;affyY}u; ntsaL.

U16H1

Semester – I

PAPER 1 – PROSE, SHORT STORY AND GRAMMAR

PROSE

Prescribed Text Book

INDI GADYA PRABHAKAR, Ed. Dr. Hiranma Shiksha Bharathi, shmiri Gate, Delhi-06.

Prescribed Lessons

1. Bharat Eke hay	By	Ramdhari Singh Dinkar
2. Japan Mein kaya dekka	By	Premchand
3.Jeevan ke theen pradhan baathey	By	Aacharya Vinobabavey

SHORT STORY

Prescribed Text Book

KAHANI VIVDHA, V. Mahadeven, Trichy.

Prescribed Lessons

1. Idhaah	By	Premchand
2. Usne kaha tha	By	chandradhar Sharma guleri

GRAMMER

Prescribed Portion

1. Noun
2. Verb
3. Gender (Change the gender only)
4. Number (Change the number only)
5. Aarth and Ultey Sabdh Likeye

Reference Book

VYAKARANPRADEEP By Ramdev, Saraswathi Prakashan, Varansi

UNITISED SYLLABUS
PAPER 1 – PROSE, SHORT STORY AND GRAMMAR

Semester – I
Time 3 Hrs Max Marks 75

UNIT- 1

1.Noun
2.Bharath Eke Hai
3.Gender

UNIT- 2

1.Gender
2.Idhgaah
3.Jaapan mein kya dheka

UNIT- 3

1.Jeevan ke theyeen pradhan bhathey
2.Idhgaah
3. Number

UNIT-4

1.Ling Badhaliye,Vachan Badhaliye
2.Verb
3.Aarth (Meanings) Likeye

UNIT-5

1.Aarth (Meanings) Likeye
2.Ultey Sabdh (opposite) Likeye

QUESTION PAPER PATTERN

SECTION- A (20 Marks)

I 1. Change the Gender (Ling)	**10/12**	(10Marks)
2. Change the Number (Vachen)	**10/12**	

SECTION- B (25 Marks)

II. One Question from each unit (either or)

1.	From Prose	(1 out of 2)	5 Marks
2.	From Short story	(1 out of 2)	5 Marks
3.	From Grammar	(1 out of 2)	5 Marks
4.	Meanings 5 nos	(Either or)	5 Marks
5.	Opposites 5 nos	(Either or)	5 Marks

SECTION- C (3x10=30 Marks)

III. One Question from each unit **(Three out of five)**

1. From Prose
2. From Prose
3. From Short Story
4. From Grammar
5. From Grammar

U16H2

Semester – II

PAPER II – COMPREHENSION, DRAMA, GRAMMAR-II,GENERAL ESSAY AND TRANSLATION – I

COMPREHENSION : **General Paragraph from Anuvadh Abyas Bah – 3, Dakshina Bharath Hindi Prachar Sabha, Chennai – 17.**

DRAMA

:

Prescribed Text Book : **Subodh Hindi patamala – 2 Dakshina Bharath Hindi Prachar Sabha, Chennai – 17.**

Prescribed Portion : **APPOORVA THYAG By Balashori Reddy**

GRAMMAR – II

Prescribed Portion : **1. Pronoun**
2. Adjectives
3. Adverb
4. Case Endings
(Definition and Name of types only)
5. Paryaivachaye Sabdh

Reference Book : **VYAKARANPRADEEP**
By Ramdev, Saraswathi Prakashan, Varansi

GENERAL ESSAY

Prescribed Book : **Subodh Hindi Rachna – 2 Dakshina Bharath Hindi Prachar Sabha, Chennai – 17**

Prescribed Portions : **1. Priya Theohar**
2. Gaayi
3. Samachar pathra

TRANSLATION -1

Prescribed Book : **Anuvadh Abyas Bah – 1,1 to 10 lessons Dakshina Bharath Hindi Prachar Sabha, Chennai – 17**

Prescribed Portions : **1 to 10 Lessons**

UNITISED SYLLABUS
PAPER II – COMPREHENSION, DRAMA, GRAMMAR-II,GENERAL ESSAY AND TRANSLATION – I

Semester – II
Time 3 Hrs Max Marks 75

UNIT- 1

Comprehension
Aproova Thyag
Pronoun
Translation 1,2

UNIT- 2

Comprehension
Aproova Thyag
Adjectives
Translation 3,4

UNIT- 3

Comprehension
Priya Theohar
Adverb
Translation 5,6

UNIT-4

Comprehension
Gaayi
Case Endings
Translation 7,8

UNIT-5

Comprehension
Samachar pathra
Paryaivachaye Sabdh
Translation 9,10

QUESTION PAPER PATTERN

SECTION- A (20 Marks)

I . Answer all the Questions:

(a)	Write Same meaning (Paryavachi) (Each word two meaning must) – 10/12		10 x 1 = 10
(b)	Answer in one sentence	(Any 5)	5 x 2 = 10

SECTION- B (25 Marks)

II. One Question from each unit (either or)

1. From Drama	(1 out of 2)	5 Marks
2. From Grammar	(1 out of 2)	5 Marks
3. From Grammar	(1 out of 2)	5 Marks
4. Translation (Hindi to English)	(Either or)	5 Marks
5. Translation (English to Hindi)	(Either or)	5 Marks

SECTION- C (3x10=30 Marks)

III. One Question from each unit (Three out of five)

1. From General Essay
2. From General Essay
3. From Grammar
4. From Grammar
5. Comprenhension

U16H3

SEMESTER – III
PAPER III – MODERN AND MEDIEVAL POETRY, DIOLOGUE WRITING AND TRANSLATION – II

1. POETRY

Book Name	**:**	**1. KAVYA SAURABH** **2. SUBODH HINDI – 2** **Pub. Dakshina B. Hindi P.Sabha Chennai.**
Prescribed Lessons	**:**	**1. Samaya** **2. Chhah** **1.Kabir key Dhohay 1to 5** **2.Thulsi key Dhohay 1to 5** **3.Rahim key Dhohay 1 to 5**
2. DIALOGUE WRITING	**:**	**1. Doctor Aur Marij** **2. Kithab key Dhukhan** **3.Pariksha key Bharey Mein**

3. TRANSLATION - II

Prescribed Book	**:**	**Anuvadh Abyas Bah – 1,** **Dakshina Bharath Hindi Prachar Sabha, Chennai – 17**
Prescribed Portions	**:**	**11 to 20 Lessons**

UNITISED SYLLABUS
PAPER III – MODERN AND MEDIEVAL POETRY, DIOLOGUE WRITING AND TRANSLATION – II

Semester – III
Time 3 Hrs Max Marks 75

UNIT- 1

Samya
Kabir key Dhohay
Translation 11, 12

UNIT- 2

Chhah
Thulsi key Dhohay
Translation 13, 14

UNIT- 3

Rahim key Dhohay
Dialogue – Doctor Aur Marij
Translation 15, 16

UNIT-4

Dialogue – Kithab key Dhukan
Poetry Review
Translation 17, 18

UNIT-5

Dialogue – Parisha key Bharey mein
Translation 19,20

QUESTION PAPER PATTERN

SECTION- A (20 Marks)

I . Answer in one sentence 10 x 2 = 20 Marks

SECTION- B (25 Marks)

II. One Question from each unit (either or)

1. Annotation from modern poetry (1 out of 2) 5 Marks
2. Annotation from modern poetry (1 out of 2) 5 Marks
3. Short Notes from Poetry (1 out of 2) 5 Marks
4. Translation (Hindi to English) (Either or) 5 Marks
5. Translation (English to Hindi) (Either or) 5 Marks

SECTION- C (3x10=30 Marks)

III. One Question from each unit (Three out of five)

1. Summary of Modern Poetry
2. Summary of Medieval Poetry
3. Summary of Medieval Poetry
4. Dialogue Writing
5. Dialogue Writing

U16H4

SEMESTER - IV
PAPER IV – FUNCTIONAL HINDI, GENERAL ESSAY, GRAMMAR – III AND TRANSLATION – III

1. LETTER WRITING

Prescribed Book	**:**	**Abinav Patralekhan Hindi Parchar Sabha Chennai.**
Presribed Portion	**:**	**1. Leave Letter 2. Placing Order for Books 3. Complaints Letter 4. Permission Letter for Tour**

2. TECHNICAL TERMS

Prescribed Book	**:**	**Hindi Vatayan, by Dr.Chandra Mohan Vishavidyalay Prakashan, Varansi.**
Prescribed Portion	**:**	**Annexure enclosed**

3. GENERAL ESSAY

Prescribed Book	**:**	**Nibandh Praveshika, Dakshina Bharath Hindi Prachar Sabha, Chennai – 17**
Prescribed Portions	**:**	**1. Pushthakalaya 2. Pradhusan 3. Vidhyarthi Jeevan**

4. GRAMMAR – II

Prescribed Portions	**:**	**1. Tense (Kal parivarthan) 2. Correct the Sentence (Sudha Keyjiye)**
Reference Book	**:**	**Vyakaranpradeep, by Ramdev, Saraswathi Prakashan, Varansi.**

5. TRANSLATION – III

Prescribed Book	**:**	**Anuvadh Abyas Bah – 2, Dakshina Bharath Hindi Prachar Sabha, Chennai – 17**
Prescribed Portions	**:**	**1 to 10 Lessons**

UNITISED SYLLABUS
PAPER IV – FUNCTIONAL HINDI, GENERAL ESSAY, GRAMMAR – III AND TRANSLATION – III

Semester – IV
Time 3 Hrs Max Marks 75

UNIT- 1

Leave Letter
Technical Terms
Pushthakalaya
Translation 1,2

UNIT- 2

Placing Order for Books
Technical Terms
Pradhusan
Translation 3,4

UNIT- 3

Compliant Letter
Vidhyarthi Jeevan
Technical Pharses
Translation 5,6

UNIT-4

Permission Letter for Tour
Technical Pharses
Kal Parivarthan (Change the Tense)
Translation 7,8

UNIT-5

Kal Parivarthan (Change the Tense)
Sudha Keyjiye (Correct the Sentence)
Translation 9,10

QUESTION PAPER PATTERN

SECTION- A (20 Marks)

I . Answer all the Questions: **10x2 = 20 Marks**

Write 10 Technical Terms in Hindi 10/12 (Only Designation)

SECTION- B (25 Marks)

II. One Question from each unit (either or)

1. Change the Tense	(5 out of 7)	5 Marks
2. Correct the Sentence	(5 out of 7)	5 Marks
3. Technical Pharses (English to Hindi) 5 nos	(Either or)	5 Marks
4. Technical Pharses (Hindi to English) 5 nos	(Either or)	5 Marks
5. Translation (Hindi to English)	(Either or)	5 Marks

SECTION- C (3x10=30 Marks)

III. One Question from each unit (Three out of five)

1. From General Essay
2. From General Essay
3. From Letter Writing
4. From Letter writing
5. Translation (10nos) English to Hindi

Subject Code:U16S1

National College (Autonomous) Tiruchirapalli
Language Programme Part I Sanskrit Semester I
Paper I - Sanskrit - I
(For the students admitted from the the academic year June 2016 onwards)

Time: 3 Hours **Maximum Marks: 75**

Unit I

देवनागरी लिपिः - परिचयः

१। स्वराः (१५)
२। व्यञ्जनानि (३३)
३। संयुक्ताक्षराणि
४। संयुक्ताक्षराणां लेखनप्रकारः
५। विसर्गस्य प्रयोगः तस्य उच्चारणप्रकारश्च।

Unit II

कर्तृपदानि - परिचयः

१। अकारान्त-शब्दाः (पुंलिङ्गः)
देवः
२। अकारान्त-शब्दाः (नपुंसकलिङ्गः)
फलम्
३। लिङ्गाः - सामान्यविधिः
अ। पुंलिङ्गः
आ। स्त्रीलिङ्गः
इ। नपुंसकलिङ्गः
४। लिङ्गः वचनम् विभक्तिः च
केवलम् एकवचनम् बहुवचनम् च
५। अनुवाद-अभ्यासः -
अ। आङ्गल/तमिल् भाषातः संस्कृते
आ। संस्कृतात् आङ्गल/तमिल् भाषायाम्

Unit III

१। क्रियापदानि (परिचयः)

१। वर्तमानकाले परस्मैपदिनः धातवः
अ। अन्यपुरुषः/प्रथमपुरुषः
आ। मध्यमपुरुषः
इ। उत्तमपुरुषः
ई। एकवचनम्
उ। बहुवचनम्।

Unit III (continued)

	२। क्रियापदानि - धातवः - एकवचन-बहुवचन-मात्रम् अ। गम् (गच्छ्) आ। पठ् इ। क्रीड् ई। वद्
३। अव्ययाः	तत्र, अत्र, कुत्र, यत्र, तदा, यदा, कदा, इदानीम्, शीघ्रम्, अपि , सह, एव, तु, किम्, च (१५)
४। अन्ये अकारान्त-कर्तृपदानि	अश्वः, बालकः, सूर्यः, मनुष्यः, हस्तः, अध्यापकः, इत्यादीनि (१०)
५। अनुवाद-अभ्यासः	अ। आङ्गल/तमिल् भाषायाः संस्कृते आ। संस्कृतात् आङ्गल/तमिल् भाषायाम्

Unit IV

१। विभक्ति-अन्त प्रत्ययानां आदेशाः	अ। चतुर्थी विभक्ति-प्रत्ययस्य - अर्थम् इति आदेशः आ। पञ्चमी विभक्ति-प्रत्ययस्य - तः इति आदेशः
२। तृतीया विभक्तिः	अ। सह सार्धम् साकं इति अव्ययानां उपयोगः
३। प्रश्न-निर्माण-पदानि	किम्, कुत्र, कथं, किमर्थं, कुतः, कदा
४। क्रियापदानि - (द्वितीय-स्तरः)	वर्तमानकाले परस्मैपदिनः धातवः भू (भव्), कृ (कर्), अस् , धाव् , पत्, आ-गच्छ् केवलम् एकवचनम् बहुवचनम् च
५। अनुवाद-अभ्यासः	अ। आङ्गल/तमिल् भाषायाः संस्कृते आ। संस्कृतात् आङ्गल/तमिल् भाषायाम्

Unit V

१। विशेषण-विशेष्यौ

अ। शुक्ल - नील - पीत - रक्त - हरित - कपिश - कृष्ण वर्णा;।
आ। संख्या-वाचक-पदानि (० तः ९ पर्यन्तम् मात्रम्)
इ। सुन्दरः - सुन्दरी - सुन्दरम् ,
मधुरः - मधुरा - मधुरम् इत्यादयः।

२। विभक्तीनां पुनः परिचयः (द्वितीयस्तरः)
अकारन्त-शब्दः पुंलिङ्गः/नपुंसकलिङ्गः

१। प्रथमा विभक्तिः
२। द्वितीया विभक्तिः
३। तृतीया विभक्तिः
४। चतुर्थी विभक्तिः

३। विभक्तीनां पुनः परिचयः (तृतीयस्तरः)
अकारन्त-शब्दः पुंलिङ्गः/नपुंसकलिङ्गः

५। पञ्चमी विभक्तिः
६। षष्ठी विभक्तिः
७। सप्तमी विभक्तिः
८। सम्बोधन-प्रथमा विभक्तिः

४। सर्वनाम-पदानि (अन्यपुरुषः/प्रथमपुरुषः)

१। सः - एषः
२। सा - एषा
३। तत् - एतत्
प्रथमा विभक्तिः एकवचन-बहुवचन-मात्रम्

५। सर्वनामपदानि (उत्तमपुरुषः)
(मध्यमपुरुषः)

४। अस्मद्
प्रथमा विभक्तिः, षष्ठी विभक्तिः च
एकवचन-बहुवचन-मात्रम्।

६। अनुवाद-अभ्यासः

अ। आङ्गल/तमिल् भाषायाः संस्कृते
आ। संस्कृतात् आङ्गल/तमिल् भाषायाम्

Subject Code:U16S2

National College(Autonomous) Tiruchirapalli

Language Programme Part I Sanskrit Semester II

Syllabus - Paper II - Sanskrit - II

(For the students admitted from the academic year, June 2016 onwards)

Time: 3 Hours Maximum Marks: 75

Unit I

क्रियापदानि

१। पुनश्चर्या

लट् लकारे (वर्तमानकाले)
पूर्वस्मिन् षाण्मासे अभ्यस्तानां
क्रियापदानां द्विवचनेन साकं
पुनश्चर्या
द्विवचन-परिचयः - उपयोगः च

२। लृट् लकारः - भविष्यत्कालः

१। गम् (गच्छ्)
२। पठ्
३। वद्
४। पत्
५। लिख् (लेख्)
६। क्रीड्
७। आ - गम् (गच्छ्)
८। भू - भव
९। धाव्
१०। पा - पिब्
११। दृश् - पश्
१२। कृ - कर्

३। लृट् लकारः - भविष्यत्कालः (अधिकम्)

४। लृट् लकारः - भविष्यत्कालः (अधिकम्)

५। लृट् लकारः - भविष्यत्कालः (अधिकम्)

Unit II

१। लृट् लकारे अभ्यस्तानां
धातुरूपाणाम् अभ्यासः
वाक्येषु उपयोगः
अनुवाद-अभ्यासः च
(संस्कृत-आङ्गल/तमिल्-संस्कृतेषु)

२। सर्वनामशब्दाः

१। अस्मद् शब्दः - पुनश्चर्या
(त्रिषु वचनेषु)

२। युष्मद् शब्दः
(त्रिषु वचनेषु)
३। युष्मद्-शब्द-आधारित-
वाक्येषु लृट् लकार-क्रियापदानां
उपयोगः अनुवाद-अभ्यासः च
(संस्कृत-आङ्गल/तमिल्-संस्कृतेषु)
४। तद् शब्दः - त्रिषु वचनेषु
पुंलिङ्ग-मात्रम्।
५। सर्वनाम-शब्दान् (युष्मद्-तद्)
आहत्य वाक्येषु उपयोगः
अनुवाद-अभ्यासः।
(संस्कृत-आङ्गल/तमिल्-संस्कृतेषु)

Unit III १। भोज्य-पदार्थ-नामानि

धान्य-नामानि -
चणकः, मुद्गः, माषः, तण्डुलः,
जीरकम्, मरिचम्, लशुनम्
फल-नामानि -
जम्बीरम्, आमलकम्, दाडिमम्,
नारङ्गः, बदरम्, जम्बूफलम्, कदलीफलम्
शलादुका-नामानि
आलुकम्, आर्द्रकम्, कन्दर्पः,
भोज्यपदार्थ-नामानि
ओदनम्, रोटिका, पोलिका
दुग्धम्, दधि, तक्रम्, नवनीतम्, घृतम्,

२। वार्तालापः

एतावता अभ्यस्त-शब्दानां वाक्येषु
उपयोगः - अनुवाद-अभ्यासः
(संस्कृत-आङ्गल/तमिल्-संस्कृतेषु)

३। क्त-प्रत्यय-धातवः

गतः गता गतम्
पीतः पीता पीतम्
पठितः पठिता पठितम्
क्रीडितः क्रीडिता क्रीडितम्
धावितः धाविता धावितम्
पतितः पतिता पतितम्

क्त-प्रत्यय-धातवः	आगतः आगता आगतम् लिखितः लिखिता लिखितम् खादितः, खादिता, खादितम्
३। क्रियापदानि	लट् लकारे एव - भक्ष्, खेल्, पाल्, तुल्, मार्, गण्, कथ्, क्षाल्,
४। तुमुन्नत-अव्ययाः	गन्तुम्, पातुम्, पठितुम्, क्रीडितुम्, धावितुम्, पतितुम्, लेखितुम्, भवितुम्, अर्चितुम्, खेलितुम्, चलितुम्, क्षालयितुम्, तुलयितुम्, मारयितुम्, गणयितुम्
५। अनुवाद-अभ्यासः	संस्कृतात् आङ्गले/तमिल् भाषायाम्, आङ्गलात् संस्कृते

Unit IV

१। कृषि-क्षेत्र-सम्बन्धीनि नामानि	कृषकः, कृषीवलः, बलीवर्दः, वृषभः सस्यम्, धान्यम्, तृणम्, क्षेत्रम्, हलः बीजम्, आलवालम्, मेघः, जलदः, खेटः, ग्रामः, क्रयः, विक्रयः, हट्टः, आपणः, आपणिकः, व्यवसायः- इत्यादीनि
२। काल-संबन्धीनि पदानि संख्यावाचकपदानि च	a. प्रातः, मध्याह्नः, सायम्, रात्रिः b. समयलेखनम् - सपाद-सार्ध-पादोन- पदानाम् उपयोगः c. ऋतु(काल) नामानि वसन्तः,ग्रीष्मः,वर्षाः,शरद्, हेमन्तः,शिशिर d. संख्यावाचकपदानि - १ तः २५ पर्यन्तम्
३। क्रियापदानि	लट् लकारे - क्री, वि-क्री, रुह् (रोह्), वर्ष्, वप् रच्, कृष् (कर्ष्), वस्, अर्च्
४। नपुंसकलिङ्ग-कर्तृ-पदानि	सस्यम्, धान्यम्, तृणम्, क्षेत्रम्, बीजम्, आलवालम्।
५। अनुवाद-अभ्यासः	संस्कृतात् आङ्गले/तमिल् भाषायाम्, आङ्गलात् संस्कृते

Unit V

१। आकारान्त-स्त्रीलिङ्ग-पदानि	a। माला शब्दः (एकवचन - बहुवचनमात्रम्) b। अन्यानि स्त्रीलिङ्गपदानि रमा, शाला, पेटिका, शिखा, निशा, दिशा, बाला, सभा, भार्या, स्वसा, नासिका
२। क्त्वा प्रत्यय-अन्त-अव्ययाः	गत्वा, पठित्वा, क्रीडित्वा, पीत्वा, धावित्वा, लिखित्वा, भक्षयित्वा, खेलित्वा, धारयित्वा, पतित्वा, कृत्वा, चलित्वा, क्षालयित्वा, पालयित्वा, अर्चयित्वा
३। क्रियापदानि	लृट् लकारे (एकवचन-बहुवचन-मात्रम्) धार्, कथ्, क्षाल्, पाल्, तोल्
४। सन्धि-प्रकरणम्	a. स्वरसन्धिः b. गुणसन्धिः c. वृद्धि-सन्धिः पाठ्य-पुस्तके दत्तानां पदानां परिचयः
५। अनुवाद-अभ्यासः	संस्कृतात् आङ्गले/तमिल् भाषायां तथा आङ्गलात् संस्कृते

Prescribed book:

. Saral Sanskrit Sikshak Part I, Bharatiya Vidya Bhavan (lessons 6 to 9, and 1) Mumbai 400007.

Reference:

Sanskrit for beginners, Dr Narasimhachari, M, and Dr Ramaratnam, S, N & R Publications, Chennai 600004.

Subject Code: U16S3

National College (Autonomous) Tiruchirapalli

Language Course Part I Sanskrit Semester III

Paper III - Sanskrit III

(For the candidates admitted from the academic year June 2016 onwards)

Syllabus

Time: 3 Hours

Maximum Marks: 75

Unit I

1. क्रियापदानि कर्तृपदानि च - पुनश्चर्या

लट् लकारे लृट् लकारे च पठितानां
पूर्वस्मिन् षाण्मासद्वये अभयस्तानां
क्रियापदानां, कर्तृपदानां च पुनश्चर्या

2. शब्दाः(कर्तृपदानां परिचयः)

१। इकारान्तः पुल्लिङ्गः कवि शब्दः
तस्य केचन समानान्तशब्दाः च।
एकवचनं तथा बहुवचनम् एव।
हरिः, रविः, अरिः ऋषिः, पतिः,यतिः इत्यादयः।:

२। सर्वनामशब्दः
दकारान्तः स्त्रीलिङ्गः तद् शब्दः
एकवचनं तथा बहुवचनम् एव।

३। इकारान्तः स्त्रीलिङ्गः: मति शब्दः
तस्य एकवचनं तथा बहुवचनम् एव।
तस्य केचन समानान्तशब्दाः - रुचिः, शान्तिः
कीर्तिः, बुद्धिः, मुक्तिः इत्यादयः

४। उपर्युक्त-शब्दानां वाक्येषु उपयोगः
अनुवाद-अभ्यासः च (संस्कृत-तमिल/संस्कृत-
आङ्गल/आङ्गल-संस्कृतेषु)

Unit II

क्रियापदानि

१। लट् लकारः (वर्तमानकालः)

२। लट् लकारः (वर्तमान्कालः) - अधिकम्

३। लट् लकारः (वर्तमानकालः) -अधिकम्

१। जप्
२। चर्
३। रक्ष्
४। हस्
५। वम्
६। नम्
७। दह्
८। तप्

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९। वस्
१०। इच्छ्

५। क्रियापदानां वाक्येषु उपयोगः अनुवाद-अभ्यासः च - संस्कृतात् आङ्गले/तमिल् भाषायां अथवा आङ्गलात् संस्कृते वा।

Unit III

१। क्रियापदानि	उपर्युक्त-क्रियापदानां वाक्येषु प्रयोगः संस्कृतात् आङ्गले/तमिल् भाषायां अथवा आङ्गलात् संस्कृते वा।
२। नूतन-शब्दानां परिचयः	अकारान्त-आकारान्त-इकारन्त कर्तृपदानि क्रियापदानि च मिश्रित्य वाक्येषु उपयोगः अनुवाद-अभ्यासः च
३। वार्तालाप-परिचयः	उपर्युक्त-कर्तृपद-क्रियापदानि उपयुज्य छात्रेषु वार्तालाप-अभ्यासः
४। लृट् लकारः (भविष्यत्कालः) नूतन-क्रियापदानि	१। अर्ज्
	२। दण्ड्
	३। चिन्त्
	४। ज्वल्
५। लृट् लकारः (भविष्यत्कालः) नूतन-क्रियापदानि (अधिकम्)	५। तर्ज्
	६। तर्क्
	७। तप्
	८। नट्

Unit IV

१। लङ् लकार-परिचयः (भूतकालः)	१। भूतकालः नाम किम्? भूतकालिक-क्रियापदानां परिचयः।
	१। गम् (गच्छ्)
	२। पा (पिब्)
	४। पश्य्
२। लङ् लकार-परिचयः (भूतकालः) (अधिकम्)	५। वस्
	६। पठ्
	७। वद्
	८। पत्

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३। बन्धु-वर्ग-नामानि	माता, जननी, पिता, जनकः, स्वसा भगिनी, सहोदरः, भ्राता, अनुजः, अग्रजः, अनुजा, अग्रजा, मातुलः, मातुलानी, जामाता, वधूः, वरः, मातामहः, मातामही, पितामहः, पितामही, पुत्रः, पुत्री, पौत्रः, पौत्री
४। वाक्येषु उपयोगः	उपर्युक्त-पदानां वाक्येषु प्रयोगः अनुवाद-अभ्यासः(संस्कृतात् आङ्गले/तमिल् भाषायाम् , आङ्गलात् संस्कृते वा)

Unit V

१। गृहे उपयुक्तानां उपकरणानां नामानि	पर्यङ्कः, मञ्जूषा, तालकम्, कुञ्जिका, अङ्कनी, लेखनी, उत्पीठिका, आसनम्, गणकयन्त्रम्, दूरदर्शनम्, आकाशवाणी, दूरभाषणी, दीपः, विद्युत्, विद्युत्व्यजनम्, शीतकयन्त्रम्, शीतकपेटिका, अग्निपेटिका, वस्त्रम्।(अन्यानि मुख्यानि च)
२। वासरनामानि	सोमवासरः, मङ्गलवासरः, बुधवासरः, गुरुवासरः, शुक्रवासरः, शनिवासरः, भानुवासरः
३। पक्षनामानि	शुक्लपक्षः, कृष्णपक्षः
४। मास-नामानि	चैत्रः, वैशाखः, ज्येष्ठः, आषाढः,श्रावणः, भाद्रपदः, आश्वीनः, कार्तीकः, आग्रहायणः, पौषः, माघः, फाल्गुनः अथवा मेषः, ऋषभः, मिथुनः, कटकः, सिहः, कन्या, तुला, वृश्चिकः, धनुः, मकरः, कुम्भः, मीनः ।
५। तिथिनामानि	प्रथमा, द्वितीया, तृतीया, चतुर्थी,पञ्चमी, षष्टी, सप्तमी, अष्टमी, नवमी, दशमी, एकादशी, द्वादशी, त्रयोदशी, चतुर्दशी, अमावास्या (अमाः), पूर्णीमा (पौर्णमी)

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७। नवग्रहनामानि	सूर्य, चन्द्रः, कुजः, बुधः, गुरुः, शुक्रः, शनैश्चरः, राहुः, केतुः
८। संख्या-वाचकपदानि	षड्विंशतिः आरभ्य पञ्चाशत् पर्यन्तम्।(२६-५०)

Prescribed Book:

सरलसंस्कृतशिक्षकः भागः २, भारतीयविद्याभवनम्, कुलपतिःमुन्शी मार्गः, मुम्बई, ४००००७

Reference:

1. Samskrt for Beginners, Dr M. Narasimhachari & Dr S. Ramaratnam, N&R Publications, Mylapore, Chennai 60004.
2. संस्कृत-व्यवहारसाहस्री, संस्कृत-भारती, माता मन्दिर् गली, झन्डेवाला, नव देहली ११००५५।

Subject Code: U16S4

National College (Autonomous) Tiruchirapalli

Language Course Part I Sanskrit Semester III

Paper IV - Sanskrit IV

(For the candidates admitted from the academic year June 2016 onwards)

Syllabus

Time: 3 Hours

Maximum Marks: 75

Unit I

१। कर्तृपदानि, क्रियापदानि च पुनश्चर्या

लट् लकारे, लृट् लकारे, लङ् लकारे च पूर्वस्मिन् षाण्मासत्रये अभ्यस्तानां कर्तृपदानां क्रियापदानां च पुनश्चर्या।

२। शब्दाः (कर्तृपद-परिचयः)

१। उकारान्तः पुल्लिङ्गः गुरु शब्दः केचन समानान्त-शब्दाः च।
एकवचनम् तथा बहुवचनम् केवलम्।
पशुः, मनुः, साधुः, शिशुः, प्रभुः इत्यदि शब्दाः

२। उकारान्तः स्त्रीलिङ्गः धेनु शब्दः
एकवचनम्, तथा बहुवचनम् केवलम्।

३। सर्वनामशब्दः -
दकारान्तः नपुंसकलिङ्गः तद् शब्दः
दकारान्तः पुल्लिङ्गः एतद् शब्दः
एकवचनम्, तथा बहुवचनम् केवलम्।

४। उपर्युक्त-कर्तृपदानां कर्मपदानां च वाक्येषु उपयोगः

५। अनुवाद-अभ्यासः (संस्कृतात् आङ्गले/तमिल् भाषायाम्, तथा आङ्गलात् संस्कृते च)

Unit II

क्रियापदानि

१। लट्/लृट् लकारौ नूतनक्रियापदानि

१। अञ्च्
२। दल्
३। नन्द्
४। यच्छ्

२। लट्/लृट् लकारौ नूतनक्रियापदानि

५। धृ (धरति)
६। धृ (धारयति)
७। नद् (नदति)
८। तॄ (तर्)

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३। लट्/लृट् लकारौ नूतनक्रियापदानि	९। नश् १०। निन्द् ११। पीड् १२। पोष्
४। शरीर-अङ्ग-नामानि	शिरः, केशः, कर्णः, नासिका, नयनम्, मुखम्, दन्तः, ग्रीवा, कण्ठः, उरः, स्कन्धः, करः, बाहुः, हस्तः, अङ्गुली, नखः, स्मश्रुः, शिखा, उदरः, कटिः, जानुः, पादौ, अस्थि, मांसं, रुधिरः, मेधः।
५। प्रतिदिनं-उपयुक्तानि वस्तु नामानि	वस्त्रम्, निचोलः, ऊरुकम्, उष्णीषः, उपनेत्रम्, दण्डः, पादरक्षा, घटी, द्विचक्रिका, त्रिचक्रिका, कार्-यानम्, लोकयानम्, आकाशविमानम्, रेल्-यानम्
Unit III	
१। पर्यटन-स्थल-नामानि	१। धर्म-सम्बन्धीनि स्थलानि २। आह्लादकर-संबन्धीनि स्थलानि ३। देशस्य चरित्र-चारित्र-संबन्धीनि स्थलानि ४। अन्वेषण-संबन्धीनि स्थलानि ५। विदेश-यात्रा
२। प्रतिदिनं गमनीयानि स्थलानि	देवालयः, कार्यालयः, विद्यालयः, धनकोषः, पुस्तकालयः, आपणः, चलनचित्रशाला, नाट्यशाला, महाविद्यालयः, विश्वविद्यालयः, मित्रगृहम्, स्नानगृहम्, शौचालयः, सुविधालयः,
Unit IV	
१। रचनालेखनम्	रचना-लेखन-प्रकारः उपोद्घातः, रचना, समापनम् - विधयः दश-वाक्येषु पर्यटनस्थानमेकमधिकृत्य लेखनम्
२। पत्रलेखनम्	पत्रम् नाम किम्? पत्रलेखन-प्रकारः पत्रलेखने उपयुक्ताः रीतयः पत्र-आरम्भः, शरीरम्, समापनम्

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३। पत्रलेखनम् (वैचित्र्यम्)	१। मित्राय पत्रम्।
	२। विद्यालयाय विरामपत्रम्।
	३। जनकाय पत्रम्।
४। अनुच्छेद-अभ्यासः	१। कथा-युक्तम् अनुच्छेदं पठित्वा उत्तर-लेखनम्।
	२। वार्ता-संबन्धि-लेख-युक्तम् अनुच्छेदं पठित्वा उत्तर-लेखनम्।

Unit V

१। नूतन-कर्तृपदानि	मृगवर्गः - सिंहः, व्याघ्रः, भल्लूकः, शृगालः, मूषकः, आखुः, सारमेयः, कुक्कुरः, बिडालः, वानरः, उष्ट्रः, अश्वः, गजः, वृषभः, अजः, मेषः, वराहः, धेनुः,गौः, महिषः, वत्सः, हरिणः, शशकः
	पक्षिवर्गः - काकः, कुक्कुटः, मयूरः, टिट्टिभः, गरुढः, शुकः, कपोतः,
	जलचराः - मीनः, मत्स्यः, कूर्मः, तिमिङ्गिलः,
२। व्यवहार-पदानि/वाक्यानि	शिष्टाचारः, मित्राणि, प्रयाणम्, छात्राः, परीक्षा, शिक्षकः, महिला, वेश-भूषा, कार्यालयः, आरोग्यम्, वाणिज्यम्, वातावरणम्, भोजनम्, शुभाशयाः, संकीर्ण-पदानि।
३। कर्मकाराः	घटकारः, कुविन्दः/तन्तुवायः, अयस्कारः, सुवर्णकारः, रजकः, आपणिकः, वणिजः, चर्मकारः, नापितः, संवाहकः, शाकटिकः, आरक्षकः गोपालकः, अश्वपालकः, अजपालकः, पुरोहित;,
३। व्याकरणम्	सन्धिप्रकरणम् -
	प्रभेदाः - स्वरसन्धिः, व्यञ्जन-सन्धिः
	विसर्गसन्धिः
	स्वरे - सवर्णदीर्घः, गुणः, यण्, वृद्धिः,
	अयवायावः, प्रकृतिभावः

Prescribed Books:

1. सरलसंस्कृतशिक्षकः, भागः २, भारतीयविद्याभवनम्, कुलपति मुन्शी मार्गः, मुम्बई ४०००७।
2. संस्कृत-व्यवहार-साहस्री 3. सन्देशसंस्कृतम्, -संस्कृतभारती, माता मन्दिर् गली, झण्डेवाला, नव देहली ११००५५

Reference:

1. Samskrt for Beginners, Dr M. Narasimhachari and Dr S. Ramaratnam, N & R Publications, Mylapore, Chennai 600004.

ENGLISH FOR COMMUNICATION – U16E1

Semester: I **English Language Course I**
Instruction Hours/Week: 6 **Credit: 3**

UNIT I:
1. At the College
2. On the Campus
3. Outside the Class
4. At the Post office
5. For Business and Pleasure
6. Review

UNIT II:
7. Are you Smart ?
8. Are You Creative?
9. Is it too hard to improve?
10. How to win ?
11. View Points
12. Snakes and Ladders
13. Yourself

UNIT III:
1. Birbal story- The loyal gardener
2. Hindu mythological story- The origin of coconut tree
3. Achinese story: The generous student
4. An Africal Story ; The Three Runners

UNIT IV:
5. The Golden place
6. The one – hundreth prince
7. The mouse Merchand

UNIT V:
8. When wishes come true – Rabindranath Tagore
9. The World and after
10. Julius caesar

Text Books: 1. Crystal Streams – A Prose collection by D.E. Benet. Published by New Century Book House (P) Ltd.
2. Creative English for Communication (2nd edition) by Krishnasamy and Sriraman. Published by Macmillan

ENGLISH THROUGH EXTENSIVE READING – U16E2

SEMESTER : II **ENGLISH LANGUAGE COURSE : II**

INSTRUCTION HOURS/WEEK : 4 **CREDIT : 2**

UNIT I

Excitement	:	Mack R. Douglas
Tight Corners	:	E.V. Lucas

UNIT II

Water – The Elixir of Life	:	C.V. Raman
Tree Speaks	:	C. Rajagopalachari

UNIT III

The Art of Telling Tales	:	April Hersey
A Job Well Done	:	Ruskin Bond

UNIT IV

The Panorama of India's Past	:	Jawaharlal Nehru
The Origin of Grammar	:	Margaret Bryant & Janet

UNIT V

Dangers of Drug Abuse	:	Hardin B. Jones
Crime and Punishment	:	R.K. Narayan

Text Book : Dr. Ananthan , R. Effective Communication. Ed. Chennai : Anu Chithra Pub.2010.

COMMUNICATIVE ENGLISH I – U16CE1

Semester : II **Communicative English Course : I**

Instruction Hours/ Week : 2 **Credit : 1**

UNIT I

Writing Stories

Grammar Components : Articles, Prepositions and Tenses

UNIT II

Precis Writing

Grammar Components : Non- Finite Verbs and Phrasal Verbs

UNIT III

Writing Letters

Grammar Components : Conjuctions and Interjections and Punctuation

UNIT IV

Reporting

Grammar Components : Reported Speech and Transformation of Sentences

UNIT V

Writing an Essay

Grammar Components : Sentence structure (S/V/O/C/A) and Simple, Compound and Complex sentences

Text book : Pillai, Radhakrishna G. English Grammar & Composition Ed. Chennai : Emerald Pub.2016

ENGLISH FOR COMPETITIVE EXAMINATIONS – U16E3

SEMESTER : III **ENGLISH LANGUAGE COURSE : III**

INSTRUCTION HOURS/WEEK : 6 **CREDIT : 3**

UNIT I:

Basics of English(Revision)

(a)Parts of speech and Articles

(b)Active and passive voice

(c)Framing Questions

(d)Tag questions

(e)Indirect speech

(f)Tenses

UNIT II:

(a)Errors and how to avoid them

(b)Spotting errors

(c)Reconstructing passages

(d)Précis writing

UNIT III:

Reading comprehension

UNIT IV:

(a)Sentence completion,

(b) Spelling

(c)Vocabulary – Words often confused or Misused, Synonyms, Antonyms.

UNIT V:

Letter writing , Report writing ,Paragraph writing, Essay writing

Text book : English for Competitive Examinations by R.P.Bhatnagar&Rajul Bhargava macmillanIndia ltd. Delhi.

COMMUNICATIVE ENGLISH II – U16CE2

SEMESTER : IV **COMMUNICATIVE ENGLISH COURSE : II**
INSTRUCTION HOURS/WEEK : 2 **CREDIT : 1**

UNIT I:

Enriching Vocabulary – Register Development; who is who; Synonyms, Proverbs

UNIT II:

Tense Forms with emphasis on differences between Present and Present Continuous; Past and Present Perfect , Framing questions, Auxiliaries, if clauses; conjunctions and linkers; Prepositions

UNIT III

Pronunciation, Good Pronunciation habits, Phonetic Transcription, Greetings, Farewells commands etc.,

UNIT IV:

Conversational Skills – Affirmative or Negative Language – idiomatic expressions, Phrases, Dialogue Writing,

UNIT V:

- Writing Skills – Note- taking, note- making, e-mail, Describing an object, narrating a story.
- Circulars
- Notes - reminders, warnings, farewells, apology.
- Draft invitations – marriage, annual day, inaugural functions of associations, valediction, seminar, workshop.
- Draft Short messages- compliments, birthday wishes, notifications
- Draft Posters- Slogans, Announcements
- Draft Advertisements
- Dialogue writing

Text Book

1. Communicative English by Department of English, National College(Autonomous), Trichy

READING POETRY AND DRAMA – U16E4

SEMESTER : IV **ENGLISH LANGUAGE COURSE : IV**

INSTRUCTION HOURS/WEEK : 6 **CREDIT : 2**

POETRY:

UNIT I :	John Milton	: On His Blindness
	Oliver Goldsmith	: The Village School Master
	William Wordsworth	: The Solitary Reaper
UNIT II :	P.B.Shelly	: Ozymandias
	John Keats	: La Belle Dame Sans Merci
	Robert Browning	: Incident of the French camp
UNIT III :	John Masefield	: Laugh and Be Merry
	Robert Frost	: Stopping by Woods On a Snowy Evening
	John Drinkwater	: The Vagabond

DRAMA:

UNIT IV:	Anton Chekov	: A Marriage Proposal
	Lady Gregory	: The Rising of the Moon
UNIT V:	W.St. John Tayleur	: Reunion
	William Shakespeare	: Othello, The Moor of Venice – Act V

Text Books : 1)**An Introduction to Poetry** edited by A.G.Xavier; [Macmillan]

2)**A Book Plays**: A Group of Editors, Published by Orient Blackswan

GENERAL CHEMISTRY – I- U16CH1

Semester : I **Core Course: I**
Instruction Hours/Week: 5 **Credit: 5**

UNIT I: Electronic Structure and Periodic Properties

Quantum numbers - principal, azimuthal, magnetic and spin quantum numbers and their significance - principles governing the occupancy of electrons in various quantum levels - Pauli's exclusion principle - Aufbau principle - Hund's rule - (n+l) rule - stability of half-filled and fully-filled orbitals.Periodic properties -variation of atomic volume, atomic and ionic radii, ionization potential, electron affinity and electronegativity along periods and groups - factors affecting periodic properties Pauling's and Mulliken's scales of electronegativity.

UNIT II: Chemical Bonding

Ionic bond - lattice energy and Born-Haber cycle (no derivation).Covalent bond - polarity of bonds - Fajan's rules - degree of covalent character in ionic bond.VSEPR theory - shapes of simple inorganic molecules containing lone pairs and bond pairs of electrons ($BeCl_2$, NH_3, H_2O, PCl_5, SF_6, IF_7).Hydrogen bonding - properties, types and consequences.Intermolecular forces - London forces.

UNIT III: Organic Chemistry UNIT III: Organic Chemistry

Catenation and classification of organic compounds.Hybridisation and geometry of molecules - methane, ethane, ethylene and acetylene - bond length, bond angles and bond energy.Polarisation effects - inductive effect, electromeric effect, mesomeric effect, hyperconjugation and steric effects.Cleavage of bonds - hemolytic and heterolytic fission of C-C bonds.Reaction intermediates - free radicals, carbocations, carbanions - structure and their statbility.

UNIT IV: Physical Chemistry

Gaseous state:

The Gas constant "R" in different units - deviation from ideal behavior - Van der Waal's equation for real gases. Critical Phenomena - PV isotherms of real gases, critical temperature, continuity of state - relation between critical constants and Vander Waal's constants - Determination of critical volume - the law of corresponding states - reduced equation of state. Molecular velocities Root mean square, average and most probable velocities (derivation from Maxwell-Boltzmann distribution equation) - Maxwell-Boltzmann distribution of molecular velocities (no derivation) - Collision number and mean free path - Collision diameter.

UNIT V: Physical Chemistry

Solutions: Definition of ideal and nonideal solutions - concentration units - molality - molarity - formality - mole fraction - normality - weight percent and volume percent - activity and activity coefficient.

Macromolecules: Number average and weight average molecular weight of macromolecules - determination of molecular weight by osmometry (number average), ultra centrifuge (weight average), Viscometry and light scattering.

References:

01.P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised Edition (2007), SultanChand & Sons, New Delhi.

02.R. D. Madan, "Modern Inorganic Chemistry", 2nd Edition (2008), S. Chand and Company Ltd., NewDelhi.

03. B.S. Bahl and Arun Bahl, "Advanced Organic Chemistry," S .Chand and Company Ltd., New Delhi.

04.P. L. Soni, "Text book of Organic Chemistry", S. Chand and Company Ltd.,New Delhi.

05.P. L. Soni and H. M. Chawla, "Text book of Organic Chemistry", (1994), Sultan Chand & Sons, NewDelhi.

06. R. D. Madan, J. S. Tiwari and G. L. Mudhara, "A text book of First Year B.Sc. Chemistry", S. Chand andCompany Ltd., New Delhi.

07. B. R. Puri and Sharma, "Principles of Physical Chemistry", Meerut Publications, Meerut. 01. P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised Edition (2007), Sultan Chand & Sons, New Delhi.

08. R. D. Madan, "Modern Inorganic Chemistry", 2nd Edition (2008), S. Chand and Company Ltd., New Delhi.

09. B.S. Bahl and Arun Bahl, "Advanced Organic Chemistry," S .Chand and Company Ltd., New Delhi.

10. P. L. Soni, "Text book of Organic Chemistry", S. Chand and Company Ltd., New Delhi.

11. P. L. Soni and H. M. Chawla, "Text book of Organic Chemistry", (1994), Sultan Chand & Sons, New Delhi.

12. R. D. Madan, J. S. Tiwari and G. L. Mudhara, "A text book of First Year B.Sc. Chemistry", S. Chand and Company Ltd., New Delhi.

13. B. R. Puri and Sharma, "Principles of Physical Chemistry", Meerut Publications, Meerut.

14. P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised Edition 2007), SultanChand & Sons, New Delhi.

15. R. D. Madan, "Modern Inorganic Chemistry", 2nd Edition (2008), S. Chand and Company Ltd., NewDelhi.

16. B.S. Bahl and Arun Bahl, "Advanced Organic Chemistry," S .Chand and Company Ltd., New Delhi, 2012.

17. P. L. Soni, "Text book of Organic Chemistry", 28th Edition, (2004), S. Chand and Company Ltd.,New Delhi.

18. R. D. Madan, J. S. Tiwari and G. L. Mudhara, "A text book of First Year B.Sc. Chemistry", S. Chand and Company Ltd., New Delhi.

19. B. R. Puri and Sharma, "Principles of Physical Chemistry", Meerut Publications, Meerut

GENERAL CHEMISTRY I I – U16CH3

Semester : I I **Core Course : I I I**
Instruction Hours/Week : 5 **Credit : 5**

UNIT I: Titrimetric Analysis

Volumetric analysis - definitions - standard solutions, equivalence point, end point, molarity, molality, normality, mole fraction, primary and secondary standards - types of titrimetric reactions - acid-base, redox, precipitation and complexometric titrations - acid-base and redox indicators.Oxidation-reduction: oxidation number and oxidation states - equivalent weights of oxidizing and reducing agents - balancing redox equations by oxidation number method and ion-electron method.

UNIT II: Metallurgy and s-block Elements

Metallurgy - various steps in metallurgy - grinding, pulverizing - concentration (ore dressing) - hand picking, gravity separation, froth floatation, electromagnetic separation, chemical separation - calcinations and roasting - smelting, aluminothermic process - purification of metals - zone refining, vapour phase and electrolytic refining.Position of hydrogen in the periodic table - atomic hydrogen - nascent hydrogen, occluded hydrogen, ortho-para hydrogen.General characteristics of s-block elements and their compounds - oxides, hydroxides, halides and hydrides - diagonal relationship of Li and Mg, Be and Al - extraction of Li and Be - anomalous behaviour of Li and Be

UNIT III: Organic Chemistry

Nomenclature of organic compounds - IUPAC naming of simple and substituted aliphatic, aromatic and alicyclic compounds - priorities of functional groups in polyfunctional compounds (not more than).Alkanes - general methods of preparation, properties and uses.Petroleum - refining, products obtained with uses - cracking - thermal and catalytic process of cracking - synthetic gasoline - Fischer-Tropsch synthesis and Bergius method - octane number.Alkenes - general methods of preparation and properties - addition with HBr (peroxide effect), H_2SO_4, H_2O, hydroboration, ozonolysishydroxylation with $KMnO_4$ - allylic substitution by NBS.

UNIT IV: Organic Chemistry

Dienes - types - conjugated, isolated and cumulated.Synthesis of dienes - 1,3-butadiene, isoprene and chloroprene.Stability and chemical reactivity - 1,2 and 1,4 additions - kinetically and thermodynamically controlled reactions - Diel's-Alder reaction.Alkynes - acidity of alkynes - formation of acetylides - addition of water with $HgSO_4$ catalyst - addition of halides and halogens - oxidation and hydroboration (mechanisms not needed).

UNIT V: Quantum Chemistry

Quantum theory and atomic spectra Bohr's model of atoms - Bohr's theory of Hydrogen atom and spectral lines. Limitations of Bohr's model. Sommerfeld's extension. Photoelectric effect and Compton Effect. de-Broglie's equation and verification.Heisenberg's uncertainty principle – Schrodinger wave equation - Eigen values and eigen functions- significance of ψ and $\psi 2$ - Radial and angular distribution function - concept of orbital and shapes of orbital.

References:

1.P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised Edition (2007), Sultan Chand & Sons, New Delhi.

2.R. D. Madan, "Modern Inorganic Chemistry", 2nd Edition (2008), S. Chand and Company Ltd., New Delhi.

3.B.R.Puri, L.R.Sharma and K.C.Kalia, "Principles of Inorganic Chemistry",30th Edition (2008), Milestone Publishers and Distributors, New Delhi.

4.B. S. Bahl and Arun Bahl, "Advanced Organic Chemistry," S.Chand and Company Pvt. Ltd., New Delhi.

5.P. L. Soni, "Text book of Organic Chemistry", S. Chand and Company Ltd., New Delhi.

6.P.L.Soni and H.M.Chawla, "Text book of Organic Chemistry" (1994), Sultan Chand & Sons, New Delhi.

7.D.N.Bajpai, "Advanced Physical Chemistry" S.Chand and Company Ltd., New Delhi.

8. Bruce H.Mahan, "University Chemistry" Narosa Publishers, New Delhi,1989.

9. P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revied Edition (2007), Sultan Chand & Sons, New Delhi.

10. R. D. Madan, "Modern Inorganic Chemistry", 2nd Edition (2008), S. Chand and Company Ltd., New Delhi.

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13 P. L. Soni, "Text book of Organic Chemistry", 28th Edition, (2004), S. Chand and Company Ltd., New Delhi.

14D.N.Bajpai, "Advanced Physical Chemistry" S.Chand and Company Ltd., New Delhi.

15Bruce H.Mahan, "University Chemistry" Narosa Publishers, New Delhi1989

. P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revied Edition (2007), Sultan Chand & Sons, New Delhi.

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19. B. S. Bahl and Arun Bahl, "Advanced Organic Chemistry," S.Chand and Company Pvt. Ltd., New Delhi.

20. P. L. Soni, "Text book of Organic Chemistry", 28th Edition, (2004), S. Chand and Company Ltd., New Delhi.

21. D.N.Bajpai, "Advanced Physical Chemistry" S.Chand and Company Ltd., New Delhi.

22.. Bruce H.Mahan, "University Chemistry" Narosa Publishers, New Delhi1989

PRACTICAL I : VOLUMETRIC ANALYSIS– U16CH2P

Semester : I & II Core Course : II

Instruction Hours/Week : 3+3 Credit : 6

1. Estimation of HCl by NaOH using standard H_2SO_4 solution.

2. Estimation of HCl by NaOH using standard oxalic acid solution.
3. Estimation of Na_2CO_3 by HCl using standard Na_2CO_3 solution.

4. Estimation of oxalic acid by $KMnO_4$ using standard oxalic acid solution.

5. Estimation of $FeSO_4$ by $KMnO_4$ using standard Mohr's salt solution.

6. Estimation of $KMnO_4$ by thio using standard $K_2Cr_2O_7$ solution.

7. Estimation of Fe^{2+} ion by $K_2Cr_2O_7$ using standard Mohr's salt solution.

8. Estimation of $CuSO_4$ by thio using standard $K_2Cr_2O_7$ solution.

9. Estimation of Ca(II) by EDTA solution.

10. Estimation of As_2O_3 by I_2 solution using standard As_2O_3 solution.

11. Estimation of Total Hardness of Water (Demonstration only)

Scheme of Valuation

Maximum Marks: 75 Marks

Record	: 10 Marks
Procedure writing	: 10 Marks
Viva-voce	: 05 Marks
Practical	: 50 Marks

< 1% 50 Marks
1-2% 40 Marks
2-3% 30 Marks
3-4% 20 Marks
>4% 10 Marks

Wrong Calculation Reduce 5 Marks

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GENERAL CHEMISTRY III – U16CH4

Semester : III **Core Course : IV**
Instruction Hours/Week : 4 **Credit : 4**

UNIT I: Oxygen Family and Qualitative Analysis

Oxygen family - Comparative study - preparation, properties, structural elucidation and uses of ozone, hydrogen peroxide, peracids of sulphur and sodium thiosulphate.Principles of qualitative analysis- solubility product - common ion effect - complexation reactions including spot tests in qualitative analysis.

UNIT II: Boron, Carbon and Nitrogen Family

Comparative study of boron family elements - compounds of boron - diborane, borax, boron nitride, boron carbide and borazole - structure and uses.Comparative study of carbon family elements and their compounds (hydrides, halides and oxides) - chemistry of cyanogens - structure of graphite and diamondComparative study of nitrogen family elements and their compounds (hydrides, halides, oxides and oxyacids) - chemistry of hydrazine.

UNIT III: Cycloalkanes and Conformational Analysis

Cycloalkanes: Nomenclature - preparation using wurtz reaction, Dieckmann ring closure reactions and reduction of aromatic hydrocarbons - chemical properties. Substitution and ring opening reactions - relative stability of cycloakanes (cyclopropae to cyclooctane), Baeyer's strain theory, limitations – Sasche-Mohr theory of strainless rings.Conformational Analysis: Ethane, n-butane, cyclohexane.

UNIT IV: Alcohols

Alcohols: Classification and nomenclature - monohydric alcohols - preparation by reduction of aldehydes, ketones, carboxylic acids and hydrolysis of esters - individual source of alcohols. Properties: acidic nature, H-bonding, Reactions involving cleavage of -OH bond, C-O bond. Distinction between 1^0, 2^0 and 3^0 alcohols, Dihydric alcohols: prepartion, Properties and uses of glycol. Trihydric alcohols:
preparation - properties and uses. Reactions of polyhydric alcohols with $Pb(OAC)_4$, HIO_4 and OsO_4.

UNIT V: Chemical Kinetics

Rates of reaction, rate laws, rate constants, order and molecularity of reactions. Rate equations for zero, first, second and third order reactions. Derivation of rate constants for first, second order reactions. Fractional order reactions - examples, half-life period, pseudo-first order reactions - examples. Methods of determining the order of reactions. Integration, graphical, half-life and Ostwald's isolation methods. Temperature dependence of reaction rates - Arrhenius parameters and calculations. Theories of reaction rates - simple collision theory - Limitations - Steady state approximation – equilibrium approximation- Lindemann's hypothesis of unimolecular reactions - theory of absolute reaction rates.

References:

1.P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised edn., (2007), Sultan Chand & Sons, New Delhi.

2. R.D.Madan,"Modern Inorganic Chemistry", 2nd edn., (2008), S.Chand and Company Ltd., New Delhi.

3. B.S.Bahl and Arun Bahl, "Advanced Organic Chemistry," S.Chand and Company Ltd., New Delhi.

4. P.L.Soni, "Text book of Organic Chemistry", 28th Edition, (2004), S. Chand and Company Ltd., New Delhi.

5. K.S.Tewari and N.K.Vishnoi, "A Text book of Organic Chemistry", (2006), 3rd edition, Vikas Publishing House Pvt. Ltd.

6. M.K.Jain, "OrganicChemistry" 12thedition, ShobanLal Nagin Chand and Co.

7. R. D. Madan, J. S. Tiwari and G. L. Mudhara, "A text book of First Year B.Sc. Chemistry", S. Chand and Company Ltd., New Delhi.

8. B.R.Puri and Sharma, "Principles of Physical Chemistry", Publications, Meerut.

9.P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised ed., (2007), Sultan Chand & Sons, New Delhi.

10.R.D.Madan,"Modern Inorganic Chemistry", 2nd ed., (2008), S.Chand and Company Ltd., New Delhi.

11. B.S.Bahl and Arun Bahl, "Advanced Organic Chemistry," S.Chand and Company Ltd., New Delhi.

12.P.L.Soni, "Text book of Organic Chemistry", S. Chand and Company Ltd., New Delhi.

13.P. L. Soni and H. M. Chawla, "Text book of Organic Chemistry", (1994), Sultan Chand & Sons, New Delhi.

14.K.S.Tewari and N.K.Vishnoi, "A Text book of Organic Chemistry", (2006), 3rd edition, Vikas Publishing House Pvt. Ltd.

15M.K.Jain, "Organic Chemistry" 12thedition, ShobanLal Nagin Chand and Co.

16. R. D. Madan, J. S. Tiwari and G. L. Mudhara, "A text book of First Year B.Sc. Chemistry", S. Chand and Company Ltd., New Delhi.

17.B.R.Puri and Sharma, "Principles of Physical Chemistry", Publications, Meerut.

GENERAL CHEMISTRY IV - U16CH6

Semester: IV **Core Course : VI**
Instruction Hours/Week: 4 **Credits: 4**

UNIT I: Halogen Family and Zero Group Elements

Comparative study of halogens and their compounds - oxides and oxy acids of halogens (structure only) - estimation of available chlorine in bleaching powder - basic properties of halogens. Interhalogen compounds - preparation, properties and uses - pseudo halogens - preparation, properties and uses of cyanogens and thiocyanogen - comparison with halogens.Zero group - position in the periodic table - isolation of noble gases from the atmosphere and uses - compounds of xenon - XeF_2, XeF_4, XeF_6, XeO_3, $XeOF_4$ - strucutre and uses.

UNIT II: Ethers, Epoxides, Organometallic Compounds

Ethers:

Preparation **–** By dehydration of alcohols (with mechanism), Williamson synthesis (with mechanism)-Properties (formation of oxonium ion and hydrolysis).

Epoxides:

Preparation – By oxidation of alkenes , - properties-(reaction with-water , alcohol, and Grignard reagent)

Organometallic compounds :

Preparation – properties – (Nucleophilic substitution and addition reaction with aldehydes, ketones , cyanides and alkylhalides).

UNIT III: Aromaticity

Structure of benzene - stability, resonance structure, Huckel's rule of aromaticity (benzene, naphthalene and anthracene). Electrophilic Substitution reactions with mechanism of nitration, halogenation, Friedel-crafts alkylation , sulphonation.

UNIT IV: Solid State

Isotropic and anisotropic solids. Nature of the solid state - Seven crystal system-Bravais lattice, unit cell, law of rational indices,(Weiss indices) Miller indices, Symmetry elements in crystals (for cubic system only in detail).X-ray diffraction by crystals - derivation of Bragg's equation - Bragg method -powder method. Crystal structure of NaCl, KCl, ZnS and CsCl - radius ratio and packing in crystals. Vitreous state.

UNIT V: Colloids and Liquid state

Collidal state: size of colloidal particles –peptization , stability of colloids , coagulation and Protection –reverse Osmosis and desalination of sea water –Donnan membrane equilibrium electrophoresis and separation of proteins ,Gels and emulsions.

Liquid state: liquid crystals –classification, structure, properties and applications .

References:

1. P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised ed., (2007), Sultan Chand & Sons, New Delhi.
2. R. D. Madan, "Modern Inorganic Chemistry", 2nd ed., (2008), S. Chand and Company Ltd., New Delhi.

3.B.R.Puri, L.R.Sharma and K.C.Kalia, "Principles of Inorganic Chemistry",30th Ed.(2008),Milestone Publishers and Distributors, New Delhi.
4. B.S.Bahl and Arun Bahl, "Advanced Organic Chemistry," S.Chand and Company Ltd., New Delhi.
5.P.L.Soni, "Text book of Organic Chemistry", S.Chand and Company Ltd., New Delhi.
6. P.L.Soni and H. M. Chawla, "Text book of Organic Chemistry", (1994), Sultan Chand & Sons, New Delhi.
7.K.S.Tewari and N.K.Vishnoi, "A Text book of Organic Chemistry", (2006), 3rd edition, Vikas Publishing House Pvt. Ltd.
8. M.K.Jain "Organic Chemistry"12th edition, ShobanLal Nagin Chand and Co.
9. D.N.Bajpai, "Advanced Physical Chemistry", S. Chand and Company Ltd., New Delhi.
10. Bruce H.Mahan, "University Chemistry", Narosa Publishers, NewDelhi.1989
11 P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised edn., (2007), Sultan chand&sons,New Delhi.
12. R. D. Madan, "Modern Inorganic Chemistry", 2nd edn., (2008), S. Chand and Company Ltd., New Delhi.
13.B.R.Puri, L.R.Sharma and K.C.Kalia, "Principles of Inorganic Chemistry",30th Edn.(2008),Milestone Publishers and Distributors,New Delhi.
14. B.S.Bahl and ArunBahl, "Advanced Organic Chemistry," S.Chand and Company Ltd., New Delhi.
15. P.L.Soni, "Text book of Organic Chemistry", 28th Edition, (2004), S.Chand and Company Ltd., New Delhi.
16.K.S.Tewari and N.K.Vishnoi, "A Text book of Organic Chemistry", (2006), 3rd edition, Vikas
Publishing House Pvt. Ltd.
17. M. K. Jain and S. C. Charma, Modern Organic Chemistry, 14th edition, (2014), Vishal Publications, New Delhi.
18.D.N.Bajpai, "Advanced Physical Chemistry", S. Chand and Company Ltd., New Delhi.
19. Bruce H.Mahan, "University Chemistry", Narosa Publishers, NewDelhi.1989

PRACTICAL II: SEMIMICRO ANALYSIS – U16CH5P

Semester : III & IV **Core Course : V**

Instruction Hours/Week : 3+3 **Credit : 5**

Inorganic Qualitative Analysis

Analysis of a mixture containing two cations and two anions of which one will be an interferring ion. Semimicro methods using the conventional scheme with hydrogen sulphide may be adopted. **Cations to be Studies:** lead, copper, bismuth, cadmium, antimony, tin, iron, aluminium, zinc, manganese, cobalt, nickel, barium, calcium, strontium, magnesium and ammonium **Anions to be studies:** Carbonate, Sulphide, Sulphate, nitrate, chloride, bromide, fluoride, borate, oxalate, arsenite, arsenate and phosphate

Reference:

1. V. Venkateswaran, R. Veerasamy, A. R. Kulandaivelu, Basic principles ofPractical Chemistry, 2nd edition, New Delhi, Sultan Chand & sons (1997)

Scheme of Valuation

Maximum Marks: 75 Marks

Practical	: 60 marks
Record	: 10 marks
Viva-Voce	: 05 marks
Total	: 75 marks

4 radicals correct with suitable tests	:	60 marks
3 radicals correct with suitable tests	:	45 marks
2 radicals correct with suitable tests	:	30 marks
1 radical correct with suitable tests	:	15 marks

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INORGANIC CHEMISTRY – I U16CH7

Semester: V **Core Course : VII**
Instruction Hours/Week : 5 **Credit : 5**

UNIT I: Transition and Inner Transition Elements

Group study of Titanium, Vanadium, Chromium, Manganese and Iron groups - Metallurgy of Ti, V and W. Lanthanides and Actinides - general study involving electronic configuration, Oxidation state, magnetic properties and complexation behaviour - lanthanide and actinide contraction - comparative study of lanthanides and actinides.Chemistry of Thorium and Uranium.

UNIT II: Coordination Chemistry - I

Types of ligands - IUPAC NomenclatureTheories of coordination compounds - Werner, Sidgwick, Valence bond, Crystal field, Molecular orbital and Ligand field theory.

UNIT III: Coordination Chemistry - II

Isomerism - stability of complexes - factors affecting stability.Unimolecular and bimolecular nucleophilic substitution reactions in octahedral and square planar complexes - trans effect.Application of coordination compounds - separation of copper and cadmium ions - estimation of nickel using DMG and aluminium using oxine.Structure of EDTA and its complexes - complexometric titrations - principle and applications.

UNIT IV: Biological and Carbonyl and Nitrosyl Compounds

Biologically important coordination compounds - Chlorophyll, Hemoglobin and Vitamin B_{12} - structure and applications (elucidation not required).Metal carbonyls - mono and polynuclear carbonyls of Ni, Fe, Cr, Co and Mn - Synthesis, reaction , structure and uses.Nitrosyl compounds - classification**,** preparation and properties - structure of nitrosyl chloride and sodium nitroprusside.

UNIT V: Acids and Bases

Arrehenium concept - Lowry-Bronsted concept - LUX-Flood concept - The solvent system concept - The Lewis concept - Hard and Soft acids and bases - Pearson's concept - HSAB principle and it's a

Reference

01. P. L. Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised edn., (2007), SultanChand & Sons, New Delhi.

02. R. D. Madan, "Modern Inorganic Chemistry", 2nd edn., (2008), S. Chand and Company Ltd., NewDelhi.

03. J. D. Lee, Consise Inorganic Chemistry, ELBS, 4 th edn.,

04. R. Gopalan, P. S. Suramanian and K. Rangarajan, Elements of Analytical chemistry, Sultan Chand & Sons, New Delhi, 1995.

05. B. R. Puri, L. R. Sharma, K. C. Kalia, Principles of Inorganic Chemistry, 31st edition, 2011-12.

06. P.K. Bhattacharya, Chemical applications of group theory, Himalaya Publishing House, Mumbai,1998.

07. M. S. Gopinath and V. Ramakrishnan, Group theory and application, 1998

ORGANIC CHEMISTRY I- U16CH8

Semester: V **Core Course: VIII**
InstructionHours/Week:5 **Credit : 5**

UNIT I: Stereochemistry

Stereoisomerism - definition - classification - optical isomerism – optical activity - specific rotation- criteria for optical activity - asymmetric centre - chirality - achirality - D,L and d, l, rotations - elements of symmetry.Optical activity of lactic acid, tartaric acid, biphenyls, allenes and spiranes.Racemisation - Racemisation by susbsitution - resolution - methods of resolution by mechanical , conversion in to diastereo isomer and biochemical - asymmetric synthesis - partial and absolute asymmetric synthesis - Walden inversion - R, S notation of acyclic compounds with one or two asymmetric centres - Erythro and threo representations.

UNITII:Stereoisomerismand Heterocyclic

Geometrical isomerism - cis-trans, syn-anti and E-Z rotation - geometrical isomerism in maleic and fumaric acids, unsymmetrical ketoximes - methods of distinguishing geometrical isomers (Dipole moment, dehydration, heat of hydrogenation, cyclisation, melting points).Aromatic characteristics of heterocyclic compounds. Comparison of basicity of pyrrole, pyridine and amines.Preparation, Properties and uses of furan, pyrrole, thiophene, quinoline, isoquinoline and involve (Skraup synthesis and Bischler - Napieralski synthesis).

UNIT III: Carbonyl Compounds and Photochemistry

Carbonyl polarization - acidity of α-hydrogen - mechanism of aldol, perkin, knoevengal, benzoin, cannizaro, claisen, reformatsky and wittig reactions.Mechanism of reduction - $NaBH_4$, $LiAlH_4$, Wolff- Kishner and MPV reactions. Holoform, Michael addition and Oppenauer oxidation.Photochemistry of Carbonyl compounds - Norrish I and II types.

UNIT IV: Acids and Acid Derivatives

Ionisation of carboxylic acids - acidity constant - comparison of acid strengths of substituted acids - acid strength of substituted benzoic acids - hammett equations.Dicarboxylic acids - oxalic, malonic, succinic acids (Preparation, Properties and uses). Malonic and acetoacetic ester - characteristics of reactive methylene group - synthetic uses of these two esters. Tautomerism - definition, - keto-enol-identification, - amido-imido and nitro-acinitro tautomerism (Only interconversion).

UNIT V: Vitamins and Terpenes

Vitamins - types - sources - deficiency disorders. Structure of Vitamin A, B_6, B12 and C. Structural elucidation of riboflavins and ascorbic acid.

Terpenes : classification , isoprene rule , importance . structural elucidation of citral , geraniol ,and menthol.

Refereces:

01. P. L. Soni and H. M. Chawla, (1997), Text book of Organic Chemistry, 27th edition, S.Chand and Sons.

02. M. K. Jain and S. C. Charma, Modern Organic Chemistry, 14th edition, (2014), Vishal Publications, New Delhi.

ANALYTICAL CHEMISTRY Code: U16CH9E

Semester : V **Major Based Elective Course : I**
Instruction Hours/Week : 5 **Credit : 4**

UNIT I: Introduction to Analytical Chemistry

Types of analytical methods: Importance of analytical methods in qualitative and quantitative analysis - chemical and instrumental methods - advantages and limitations of chemical and instrumental methods. Laboratory Hygiene and safety: Storage and handling of corrosive, flammable, explosive, toxic, carcinogenic and poisonous chemicals. Simple first aid procedures for accidents involving acids, alkalies, bromine, burns and cut by glass. Threshold vapour concentration - safe limits - Waste disposal and fee me disposal.
Evaluation of analytical data: Idea of significant figures - its importance. Accuracy – methods of expressing accuracy - error analysis - types of errors-minimizing errors. Precision - methods of expressing precision - mean, median, mean deviation, standard deviation and confidence limit. Method of least squares - problems involving straight line graphs.

UNIT II: Quantitative Analysis

Estimations of commercial samples - determination of percentage purity of samples - pyrolusite, Iron ore, washing soda and Bleaching power - estimation of glucose and phenol. Gravimetric analysis -principle - theories of precipitation - solubility product and precipitation - conditions of precipitations types of precipitants - specific and selective precipitants - organic and inorganic precipitants - types of precipitation - purity of precipitates - co precipitation - post precipitation - precipitation from homogeneous solution - use of sequestering agent.

UNIT III: Thermo and Electroanalytical Techniques

Thermo analytical methods: Principle of thermo gravimetry, differential thermal analysis, differential scanning calorimetry - Instrumentation for TGA, DTA and DSC - Characteristics of TGA and DTA curves - factors affecting TGA and DTA curves - applications - TGA of calcium oxalate monohydrate DTA of calcium acetate monohydrate.
Electro analytical techniques: electro gravimetry - theory of electro gravimetric analysis determination of copper (by constant current procedure) – electrolytic separation of metals : Principle - separation of copper and nickel, coulometry : principle of coulometer analysis - coulometry at controlled potential - apparatus and technique.

UNIT IV: Spectro Analytical Techniques

Colorimetry and spectrophotometry - Beer-Lambert's law - principle of colorimetric analysis - visual colorimetry - standard series method - balancing method - estimation of Ni^{2+} and Fe^{3+} colorimetrically - photoelectric photometer method - infrared spectroscopy (instrumentation only) - block diagram - source - monochromator - cell - detectors and recorders - sampling techniques – NMR spectroscopy (instrumentation only)

UNIT V: Chromatography Techniques

Column chromatography - principle, types of adsorbents, preparation of the column, elution, recovery of substances and applications. Thin layer chromatography - principle, choice of adsorbent and solvent, preparation of chromatoplates, R_f-values, factors affecting the R_f-values, Significance of R_f values. Paper chromatography - principle, solvents used, development of chromatogram, ascending, descending and radial paper chromatography. Paper electrophoresis - separation of amino acids - applications. Ion-exchange chromatography - principle - types of resins - requirements of a good resin -

action of resins - experimental techniques - separation of Na-K and Ca-Mg. Gas chromatography - principle - experimental techniques - instrumentation and applications.

References:

1. A. Douglas, Skoog, D. M. West and F. J. Holler, Fundamentals of Analytical Chemistry, 7^{th} edition, Harcourt College Publishers.
2. J. Mendham, R. C. Denney, J. D. Barnes, M. Thomas, Vogel's Text book of Quantitative Chemical analysis 6th edition Pearson education.
3. B. K. Sharma, Instrumental Methods of Chemical Analysis, Goel Publishing House, Merrut, (1997).
4. R. Gopalan, P. S. Subramaniam and K. Rengarajan, Elements of Analytical Chemistry, Sultan Chand and Sons.
5. S. Usharani, Analytical Chemistry, Macmillian.

PHYSICAL CHEMISTRY I Code: U16CH10E

Semester : V **Major Based Elective Course : II**
Instruction Hours/Week : 5 **Credit : 4**

UNIT I: Thermodynamics - I

System and surrounding - isolated, closed and open systems - state of the system - Intensive and extensive variables. Thermodynamic processes - reversible and irreversible, isothermal and adiabatic processes - state and path functions - exact and inexact differentials. Work of expansion at constant pressure and free expansion. First law of thermodynamics - statement - definition of internal energy (E), enthalpy (H) and heat capacity. Relation between Cp and Cv. calculation of w, q, dE and dH for expansion of ideal and real gases under isothermal and adiabatic conditions of reversible and irreversible processes. Definition of Joule-Thomson coefficient -calculation of ($\mu_{J,T}$) for ideal and real gases - Inversion temperature. Thermochemistry - relation between enthalpy of reaction at constant volume (q_v) and at constant pressure (q_p) - temperature dependence of heat of reaction – Kirchoff's law and it's applications.

UNIT II: Thermodynamics - II

Second law of thermo dynamics - need for the law - different statements of the law - Carnot's cycle and efficiency of heat engine - Carnot's theorem - thermodynamic scale of temperature – concept of entropy - definition and physical significance of entropy - entropy as a function of P, V and T – entropy changes during phase changes - entropy of mixing - entropy criterion for spontaneous and equilibrium processes in isolated system - Gibb's free energy (G) and Helmholtz free energy (A) - variation of A and G with P, V and T - Gibb's - Helmholtz equation and its applications - thermodynamic equation of state - Maxwell's relations only - ΔA and ΔG as criteria for spontaneity and equilibrium - advantage of ΔG over entropy change.

UNIT III: Thermodynamics - III

Equilibrium constant and free energy change - thermodynamic derivation of law of mass action - equilibrium constants in terms of pressure and concentration - NH3, PCl5, - thermodynamic interpretation of Le Chatelier's principle (Concentration, temperature, pressure and addition of inert gases.) - partial molar quantities - chemical potential - Gibb's Duhem equation. van't Hoff's reaction isotherm - van't Hoff's isochore - Clapeyron equation and Clausius-Clapeyron equation – applications -third law of thermodynamics - Nernst heat theorem statement of III law and concept of residual entropy.

UNIT IV: Solutions

Completely miscible liquid systems - benzene and toluene. Raoult's law and Henry's law. deviation from Raoult's law and Henry's law. Duhem-Margules equation - theory of fractional distillation - azeotropes - HCl-water and ethanol-water systems - partially miscible liquid systems - phenol-water, triethanolamine - water and nicotine-water systems - lower and upper CSTs - effect of impurities on CST - completely immiscible liquids - principle and applications of steam distillation. Nernst distribution law - derivation. applications - dilute solutions: colligative properties, relative lowering of vapour pressure, osmosis, law of osmotic pressure.

UNIT V: Thermodynamics of Phase Changes

Definition of terms in the phase rule - derivation and application to one component systems -Water, carbondioxide and sulphur - super cooling, sublimation. two component systems - solid liquid equilibria, simple eutectic (lead-silver, Bi-Cd), desilverisation of lead - compound formation with congruent melting point (Mg-Zn) and incongruent melting point (Na-K) - solid solutions - fractional crystallization – freezing mixtures - $FeCl_3$ - H_2O systems, $CuSO_4$-H_2O system.

References:

01. B. R. Puri, L. R. Sharma, M. S. Pathania, Principles of Physical Chemistry, (23rd edition), New Delhi, Shoban Lal, Nagin Chand & Co., (1993).
02. Maron and Prutton, Physical Chemistry, London, Mac Millan.
03. P. W. Atkins, Physical Chemistry, (5th edition) Oxford University Press. (1994).
04. G. V. Castellan, Physical Chemistry, New Delhi, Orient Longmann.

PRACTICAL III (PHYSICAL CHEMISTRY PRACTICALS) - U16CH11P

Semester : V & VI **Core Course : IX**

Instruction Hours/Week : 3+3 **Credit : 5**

List of Experiments:

01. Determination of Critical Solution Temperature of phenol-water system.
02. Effect of impurity on Critical Solution Temperature of phenol-water system.
03. Determination of Transition Temperature
04. Rast Method – Determination of Kf.
05. Rast Method – Determination of molecular weight.
06. Phase Diagram – Two-component system-Simple eutectic system
07. Kinetics – Determination of rate constant of acid catalysed hydrolysis of an ester.
08. Conductometry- Acid-Base Titration, precipitation titration
09. Potentiometry - Redox Titration
10.Conductometry - Determination of cell constant and equivalent conductance of a strong electrolyte.

Scheme of Valuation

Maximum Marks: 75 Marks

Record : 10 Marks
Procedure Writing : 10 Marks
Viva-voce : 05 Marks
Practical : 50 Marks

INORGANIC CHEMISTRY – II – U16CH13

Semester : VI **Core Course : XIII**
Instruction Hours/Week : 6 **Credit : 6**

UNIT I: Binary and Organometallic Compounds

Binary compounds - hydrides, borides, carbides and nitrides - classification, preparation, properties and uses.Organometallic compounds of alkenes, alkynes and cyclopentadiene.

UNIT II: Special Classes of Inorganic Compounds

Clatharates - examples and structures - interstitial compounds. Silicones - composition, raw materials, manufacture, structure, properties and uses.
Metal alkyls - coordination polymers and phosphonitrilic polymers.Silicates - classification into discrete anions- one, two, and three dimentional structures with typical examplex - composition, properties and uses of beryl, asbestos, talc,mica, zeolites and ultramarines.

UNITIII: Metallic State

Packing of atoms in metals (bcp, ccp and hcp) - theories of metallic bonding - Electron gas, Pauling and Band theories.Structure of alloys - substitutional and interstitial solid solutions - Hume- Rothey ratios - crystal defects in stoichiometric and non-stoichiometric compounds.Semi conductors - extrinsic and intrinsic - n-type and p-type - composition, structure and uses in electronic industry

UNIT IV: Nuclear Chemistry

Introduction - composition of nucleus and nuclear forces.Nuclear stability - n/p ratio - mass defect, binding energy, packing fraction and magic numbers - nuclear shell and liquid drop models.Isotopes - detection and separation - isotopic constitution of elements - Whole number rule - Isobars, Isotones and nuclear isomers.

UNIT V: Radioactivity and Nuclear Transformations

Radioactivity - discovery, detection and measurement (Wilson Cloud Chamber) - radioactive emission - disintegration theory - modes of decay - rate of disintegration - half-life- average life - radioactive series.Nuclear transformations - use of projectiles - nuclear reactions - fission and fusion - nuclear reactor - applications of radioisotopes - carbon dating - radioactive waste disposal.

References:

01.P.L.Soni, Mohan Katyal, "Text book of Inorganic Chemistry", 20th Revised Edition (2007), Sultan Chand & Sons, New Delhi.

2. R. D. Madan, "Modern Inorganic Chemistry", 2nd Edition (2008), S. Chand and Company Ltd., New Delhi.

03. J. D. Lee, Consise Inorganic Chemistry, ELBS, 4 th edition,

04.Satyaprakash, G. D.Tuli, S. K. Basu, and R.D.Madan, Advanced Inorganic chemistry (vol I & II), S. Chand, New Delhi (2006).

ORGANIC CHEMISTRY I I – U16CH14

Semester : VI **Core Course : XIV**
InstructionHours/Week:6 **Credit : 6**

UNIT I: Nitro Compounds and Amines

Conversion of nitro benzene to o, p and m - dinirobenzene, TNT - reduction of aromatic nitro compounds in neutral, acidic and alkaline media.Relative basic characters of aliphatic and aromatic amines ring substitution in aromatic amines - diazotization and its mechanism - synthetic applications of diazonium salts.Phenylene diamines - sulphanilic acids - sulphanilamide, saccharin, chloranine-L

UNIT II: Amino acids, Proteins and Nucleic acids

Amino acids - introduction - classification, preparation, properties and reaction of amino acids. Zwitter ion, isoelectric point. Peptides - polypeptides - synthesis and end group analysis. Proteins - classification based on physical, chemical properties and physiological functions. Primary, secondary and tertiary structures of proteinNucleic acids - nucleotides, nucleosides, heterocyclic bases and sugars. DNA and RNA, biological functions.

UNIT III: Carbohydrates

Carbohydrates - classification - preparation and reactions of glucose and fructose, structural elucidation of glucose only. Mutarotation and its mechanism, epimerization. ascending and descending of sugar series - interconversions.Disaccharides - preparation, reactions and structures of maltose, lactose and sucrose. (Structural elucidation NOT necessary).Polysaccharides - starch and cellulose. Properties, structures and uses. (Structural elucidation NOT necessary).

UNIT IV: Phenols , Dyes and Polymers

Acidic character of phenols - electrophilic substitution reactions of phenols - coupling with diazonium salts, Reimer-Tiemann reaction, Houben-Hoesch acylation, Gattermann's reaction, Kolbe's reaction.Cresols, Nitro and amino phenols, di and trihydric phenols, α and β-napthols preparation and properties.Dyes - theory of color and constitution. Classification according to structure and application. Preparation and uses of the following dyes.

(i) Azodyes - methyl orange and
Bismark Brown. (ii) Triphenyl methane
dyes - Malachite green.
(iii) Phthalein dyes - Phenolphthalein and flourescein
(iv) Vat dye - Indigo
(v)Anthraquinone dye – Alizarin.

Polymers: Definition , types of polymers , difference between thermosetting and thermoplastic polymers . preparation of caprolactam , nylon 66, polyester and epoxy resins.

UNIT V: Molecular Rearrangement and Alkaloids

Molecular Rearrangements - classification and mechanism. Pinacol-pinacolone - Beckmann rearrangement.Hoffmann - Curtius - Benzidine , Cope and Claisen-Fries – Benzil-Benzilic acid rearrangements .

Alkaloids - general methods of isolation - importance - structure elucidation of coniine, piperine and nicotine.

PHYSICAL CHEMISTRY II Code: U16CH15

Semester : VI **Core Course : XV**
Instruction Hours/Week : 6 **Credits : 6**

UNIT I: Electrical Conductance

Electrical transport and conductance in metal and in electrolytic solution- specific conductance and equivalent conductance - measurement of equivalent conductance. Arrhenius theory of electrolytic dissociation and its limitation - Arrhenius theory of strong and weak electrolytes. Ostwald's dilution law - applications and limitation - variation of equivalent conductance with concentration. Kohlrausch's law and its applications. The elementary treatment of the Debye-Huckel-Onsager equation for strong electrolytes - Transport number and Hittorf's rule - determination by Hittorf's method and moving boundary method - application of conductance measurements - determination of the concentrations of strong electrolytes and acids. Determination of Ka of acids - determination of solubility product of a sparingly soluble salt - common ion effect - conductometric titrations.

UNIT II: Electrochemical Cells

Electrolytic and galvanic cells - reversible and irreversible cells - conventional representation of electrochemical cells - electromotive force of a cell and its measurement - calculation of thermodynamic quantities of cell reactions (ΔG, ΔH, ΔS and K) - application of Gibbs-Helmholtz equation - concentration and EMF - Nernst equation - types of reversible electrodes -gas/metal ion - metal/metal ion; metal/insoluble salt/anion and redox electrodes - electrode reactions - Nernst equation - derivation of cell - EMF and single electrode potential - standard hydrogen electrode - reference electrodes - standard electrode potentials - sign convention - electrochemical series and its significance - concentration cell with and without transport - liquid junction potential - application of EMF of concentration cells - valency of ion- solubility product and activity co-efficient – potentiometric titrations - determination of pH using hydrogen and quinhydrone electrodes - determination of pK_a of acids by potentiometric method.

UNIT III: Photochemistry

Consequences of light absorption - Jablonski diagram - radiative and non-radiative transitions - laws of photo chemistry - Lambert-Beer, Grothus-Draper and Stark-Einstein's law of photochemical equivalence. quantum efficiency - photochemical reactions - rate law - kinetics of H_2-Cl_2 and H_2-Br_2 reactions - comparison between thermal and photochemical chain reactions - photo sensitization and quenching - Fluorescence, phosphorescence and chemiluminescence.

UNIT IV: Spectroscopy - I

Electromagnetic spectrum - the regions of various types of spectra.

Microwave spectroscopy: Rotational spectra of diatomic molecules- treatment as rigid rotator - condition for a molecule to be active in microwave region - rotational constants (B) - and selection rules for rotational transition. Frequency of spectral lines, calculation of inter - nuclear distance in diatomic molecules.

Infrared spectroscopy: Vibrations of diatomic molecules - harmonic and anharmonic oscillators - zero point energy - dissociation energy and force constant - condition for molecule to be active in the IR region - selection rules for vibrational transition - fundamental bands - overtones and hot bands - diatomic vibrating rotator - P,Q,R branches - determination of force constant

UV visible spectroscopy: conditions - theory of electronic spectroscopy - types of electronic transitions - Franck-Condon principle – pre-dissociation - applications.

UNIT V: Spectroscopy - II

Raman spectroscopy: Rayleigh scattering and Raman scattering - Stokes and antistokes lines in Raman spectra - Raman frequency - quantum theory of Raman effect - condition for a molecule to be Raman active - comparison of Raman and IR spectra - structural determination from Raman and IR spectroscopy - rule of mutual exclusion.

NMR spectroscopy: Nuclear spin and conditions for a molecule to give rise to NMR spectrum -theory of NMR spectra - number of NMR signals - equivalent and non-equivalent protons - position of NMR signals - shielding, deshielding, chemical shift, ∂ and tau scales - peak area and number of protons - splitting of NMR signals - spin-spin coupling- examples of simple compounds.

References:

1 .S.H.Maron, and J.B.Lando, Fundamentals of Physical Chemistry, Macmillan.

2. B. R. Puri, L. R. Sharma, and B. K. Pathania, Principles of Physical Chemistry, Vishal publishing company.

3. S. Glasstone and D. Lewis, Elements of Physical Chemistry, Macmillan.

4. Rajaram and Kuriacose, Thermodynamics for students of chemistry.

5.Khterpal and S.C. Pradeep, Physical Chemistry, Volume I & II, Pradeep publications Jalandhur, 2004.

6.D.V.S.Jain and S.P.Jainhar, Physical Chemistry, Principles and problems, Tata

FOODCHEMISTRY - U16CH16E

Semester **Elective Course : III**
InstructionHours/Week:5 **Credit : 4**

UNIT I: NUTRITION AND BALENCED DIET

Nutrition and balanced diet –calorific value of food stuff –energy requirements of individuals . Diseases associated with protein malnutrition, vitamin deficiency . nutritional importance of carbohydrates , fibers and lipids.

UNIT II: FOOD ADULTERATION AND FOOD POISON

Food adulteration – Types of food adulterants – intentional, incidental . common adulterants and theirdetection by simple analytical techniques in different food – milk and milk products, (butter , ghee) , vegetable oils , wheat , rice , dhal, spices , pulses. Estimation of iodine value in oil , isolation of casein from milk and estimation of available carbondioxide in baking powder.

Food poison – food poison - Natural poisons (alkaloids – nurotoxing) - Chemical poisons – first aid for poison consumed victims.

UNIT III: FOOD ADDITIVES

Food additives –artificial sweetners –saccharin –cyclomate and asparatate .food flavours – esters aldehydes and heterocyclic compound . Food colours – restricted use of spurious colours – emuldifying agents – leavening agents ,baking powder, yeast - taste makers –MSG , vinegar.

UNIT-IV : BEVERAGES

Beverages -Soft drinks –soda –fruit juices –alcoholic beverages examples . Carbonation –
Addition to alcohol – cirrhosis of liver and social problems .

UNIT V : FOOD PRESERVATION AND QUALITY CONTROL

Food preservation – methods – preservation by low temperature , high temperature – preservatives .

Quality control: specifications and standards . PFA , FPO , FDA, Drug license , WHO standards , ISI specifications

packing and label requirements , essential commodities act , commune protection act , AGMARK – basic concepts.

REFERENCES:

1. M.Swaminathan ,Food Science and Experiment foods ,ganesh and company

2. Jayashree Ghosh , Fundamental concepts of Applied chemistry ,S.Chand & co .publishers.

3. Thangamma Jacob, text Books of Applied chemistry for home science and allied science, Macmillan

PRACTICAL IV (GRAVIMETRIC AND ORGANIC ANALYSIS) – U16CH12P

Semester : V & VI Core Course : X

InstructionHours/Week: 3+3 Credit : 5

Gravimetric Analysis:

01. Estimation of Lead as lead chromate.
02. Estimation of Barium as barium chromate.
03. Estimation of Nickel as Nickel - DMG complex.
04. Estimation of Copper as copper (I) thiocyanate
05. Estimation of Magnesium as magnesium oxinate
06. Estimation Calcium as calcium oxalate monohydrate
07. Estimation of Barium as barium sulphate.
08. Estimation of Iron as Iron (III) oxide.

Organic Qualitative Analysis:

Analysis of Simple Organic compounds (a) characterization of functional groups (b) confirmation by preparation of solid dervatives / characteristic colour reactions. Note: Mono-functional compounds are given for analysis. Incase of bi-functional compounds, students are required to report any one of the functional groups.

Organic Preparation:

Preparation of Organic Compounds involving the following chemical conversions

1. Oxidation, 2. Reduction, 3. Hydrolysis, 4. Nitration, 5. Bromination, 6. Diazotization and 7. Osazone formation

Determination of Physical Constants (Demonstration only):

Determination of boiling /melting points by semimicro method.

Reference:

01. V. Venkateswaran, R. Veerasamy, A. R. Kulandaivelu, Basic principles of Practical Chemistry, 2nd edition, New Delhi, Sultan Chand & sons (1997).

Scheme of Valuatio

Maximum Marks: 75 Marks

Record : 05+05=10 Marks Viva Voce : 05 Marks
Gravimetric : 30 Marks
Organic Analysis and Organic Preparation: 30 Marks

Organicreparation :
10 Marks Aromatic/Aliphatic
: 03 Marks Saturated/Unsaturated
: 03 Marks Special Element
: 06 Marks Functional Group
: 05 Marks Derivative
: 03 Marks

ALLIED CHEMISTRY I - U16ACH1

Semester :I / III **Allied Course: I / III**
Instruction Hours/Week: 5 **Credit: 4**

UNIT - I

Shapes of Molecules: Application of valence shell electron pair repulsion theory to simple molecules - BF_3, CH_4 and H_2O.
Molecular Orbital Theory: Some important basic concepts of MO theory - LCAO, bonding and antibonding orbitals and bond order - application of MO theory to H_2, He_2, N_2, O_2, F_2.

UNIT - II Solutions and solid state

Solutions: Definition of ideal and nonideal solutions - concentration units - molality - molarity -formality - mole fraction - normality - weight percent and volume percent - activity and activity coefficient.
Solid State: Isotropic and anisotropic solids Nature of the solid state - Seven crystal system-Bravais lattice-unit cell - Symmetry elements in crystals (for cubic system only in detail).X-ray diffraction by crystals - Derivation of Bragg's equation.

UNIT - III

Chemotherapy: Definition of chemotherapy- examples each for (i) Analgesics, (ii) antibacterial, (iii) anti-inflammatory, (iv) antipyretic, (v) antibiotic, (vi) antitubercular, (vii) antiviral, (viii) antitussive, (ix) antiallergic, (x) antidiabetics, (xi) antihypertensive, (xii) anaesthetics (local and general) Structure not necessary.
Organic reactions: Osazone test, biuret test, condensation reactions for aldehydes and ketones, Esterification reaction, Diazotization followed by coupling and phthalein fusion test.

UNIT - IV

Amino Acids and Proteins: Amino acids - classification based on structure - essential and non-essential amino acids - proteins - classification based on physical properties and biological functions, structure of proteins- primary, secondary and tertiary (elementary treatment).

UNIT - V
Colloids: Definition - classification of colloidal solutions - preparation, purification, properties - Non-settling, osmotic pressure, Tyndall effect, electrical charge, electrophoresis, Imbibition.
Chemical kinetics: Order of reactions and their determinations - activation energy, effect of temperature on reaction rate.
References:
1. P.L. Soni, Textbook of Inorganic chemistry
2. P.L. Soni,Textbook of Organic chemistry
3. P.L. Soni, Textbook of Physical chemistry

ALLIED CHEMISTRY II Code:U16ACH3

Semester : IV **Allied Course: III/V**
Instruction Hours/Week: 4 **Credit: 4**

UNIT -I

Coordination Chemistry: Complexes - Classification, IUPAC Nomenclature of mononuclear complexes. Chelation and its industrial importance with particular reference to EDTA. Biological role of haemoglobin and chlorophyll. Applications of complexes in qualitative and quantitative analytical chemistry.

Industrial Chemistry: Fuel gases - Water gas, producer gas, L.P.G. gas, gobar gas and natural gas. Fertilizers - NPK and mixed fertilizers, micronutrients and their role in plant life and biofertilizers

UNIT - II

Surface Chemistry: Adsorption - factors affecting the adsorption of gases by solids - types of adsorption - differences between physisorption and chemisorption - catalysis - homogeneous and heterogeneous catalysis - examples.

Photochemistry: Laws governing the absorption of light - Lambert's law and Beer's law - laws of photochemistry - Grotthus law, Stark-Einsten's law and - quantum efficiency.

UNIT - III

Fundamental concepts in Organic chemistry: Bond length - bond energy - polar and nonpolar molecules - resonance effect - rules governing resonance - hydrogen bonding - effect on boiling points - effect on water solubility.

Synthetic polymers: Definition - Teflon, alkyd and epoxy resins, polyesters - general treatment only.

UNIT - IV

Dyes: Definition – classification of dyes based on structure and method of application (two examples for each classification)

Fats and oils: Definition of fats and oils – distinction between fats and oils – chemical properties – analysis of fats and oils – saponification value, iodine value

UNIT - V

Electrochemistry: Specific and equivalent conductivities - their determinations- effect of dilution on conductivity - an elementary idea about basic theory - Ostwald's dilution law, Kohlraush law, conductivity measurements and conductometric titrations.

Phase rule: Definition of phase, component and degree of freedom. Explanation of one - component system (Water).

References:

1. P.L. Soni Textbook of Inorganic chemistry
2. P.L. Soni Textbook of Organic chemistry
3. P.L. Soni Textbook of Physical chemistry

ALLIED CHEMISTRY PRACTICAL Code: U16ACH2P

Semester : I & II/III & IV **Allied Course:** II/IV

Instruction Hours/ Week:3 **Credits: 4**

I VOLUMETRIC ANALYSIS

1. Estimation of HCl using NaOH (Standard Sulphuric acid)
2. Estimation of oxalic acid using NaOH (standard HCl)
3. Estimation of sodium carbonate using HCl (standard sodium carbonate)
4. Estimation of ferrous sulphate using potassium permanganate (Standard Mohr's salt)
5. Estimation of oxalic acid using potassium permanganate (Standard oxalic acid)
6. Estimation of FAS using potassium permanganate (Standard oxalic acid)

II ORGANIC ANALYSIS

Qualitative analysis of the following organic compounds

1. Carboxylic acid
2. Amide
3. Primary aromatic amine
4. Aromatic aldehyde
5. Aromatic ketone
6. Carbohydrate
7. Simple phenol

AGRICULTURAL CHEMISTRY - U16NMCH1

Semester:IV **Non-Major Elective:1**
Instruction Hours/Week:2 **Credits: 2**

UNIT-I PLANT NUTRIENTS-I

Plant nutrients – macro and micro nutrients – their role in plant growth Sources –forms of nutrients absorbed by plants.

UNIT-II PLANT NUTRIENTS-II

Factors affecting nutrients absorption – deficiency symptoms in plants –corrective measure – chemicals used for correcting nutritional deficiencies -nutrients requirement of crops –their availability fixation and release of nutrients .

UNIT-III FERTILIZERS

Fertilizers -classification of NPK fertilizers - sources – natural and synthetic – straight – complex – liquid fertilizers , their properties – use and relative efficiency secondary and micro nutrients fertilizers - mixed fertilizers.

UNIT-IV PESTICIDES

Pesticides :definition - classification - organic and Inorganic pesticides –Mechanism of action – characteristics safe handling of pesticides - impact of pesticides on soil, plants and environment.

UNIT-V FUNGICIDES

Definition - classification - mechanism of action – sulphur ,copper ,mercury compounds ,dithanes ,dithiocarbamate.

References :

1.Biswas T.D and Mukherjee S.K Text book of Soil Science 1987
2.Daji A.J. A text book of Soil Science, Asia publishing house, Madras - 1970
3.Tisdale S.L. Nelson W.L and Beaton J.D . Soil fertility and fertilizers, Macmillan pub Co New York 1990.
4. Hesse P.R ,A Text book of Soil chemical analysis John Murray New York 1971.
5. Buchel K.H ,Chemistry of pesticides ,John Willey and Sons New York 1983
6. Sree Ramulu V.S Chemistry of Insecticides and Fungicides ,Oxford and IBH publishing Company ., New Delhi 1979

COSMETICS CHEMISTRY Code: U16NMCH2

Semester: V **Non-Major Elective: II**

Instruction Hours/Week:2 **Credit: 2**

UNIT-I

SOAPS

Manufacture of Soaps ,formulation of toilet soaps –different ingredients used - soft soaps ,shaving soaps and Creams.

UNIT-II

DETERGENTS

Anionic detergents – manufacture and applications –Cationic detergents – manufactures and applications

UNIT-III

COSMETICS

Shampoo -different kinds shampoo –anti-dandruff ,anti-lice ,herbal and baby shampoo hair dye –manufacture of conditioners

UNIT-IV

SKIN PRODUCTS

Preparations of skin - skin powder ,nail polish, Lipsticks, Sun cream ,UV rays protecting cream.

UNIT-V

TOXICITY

Toxic chemical ingredients –skincare product –toiletries product –carcinogens –other chemical.

References

1. Thangamma Jacob “A text book of applied chemistry for Home science and Allied Sciences”
2. Chemical process Industries –R-Norris Shreve
3. Industrial chemistry by B,K,Sharma ,Goel publishing house 1995.
4. Fundamental concept of Applied chemistry by Jayashree Ghosh

SEMESTER – II **COURSE CODE:**

U16SBE1

PART – IV: COMPUTER APPLICATIONS – I - OFFICE AUTOMATION

HOURS: 2 **CREDITS: 2**

UNIT I:

MS- Word- Introduction to Computers - Hardware - Software, Operating System: Windows XP -MS-Paint, Notepad, WordPad, Introduction to MS-Word, Creating, Editing and Formatting Document - Working with Drawing objects - Text Manipulation

UNIT II:

Working with Tables – Columns – Labels - Plotting, editing and Filling drawing objectsBookmark – Header & Footer - Checking and Correcting a document - Creating Labels – Envelops – Mail Merge – Formatted output and Report generation Printing Documents, Working with Internet.

UNIT III:

Ms – Excel - Ms – Excel: Introduction – Data Entry – Cell Formatting - Plotting Graphs – Workbook Features – Library Functions

UNIT IV:

Conditional Functions and Data Sorting – Limit the data on a worksheet - Data Validation – Data consolidation - Chart creation - Checking and Correcting Data - Tracking and Managing Changes- Advanced Features

UNIT V:

MS – PowerPoint- Introduction - Creating, Editing and Formatting Presentation – Applying Transition and Animation Effects - Applying Design Templates - Viewing and Setting up a Slide Show - Navigating among Different Views - Ms Outlook: Introduction to Folder List – Address Book.

TEXTBOOKS

1. Jill Murphy, Microsoft Office Word- Comprehensive Course, Labyrinth Publications, 2003.
2. McGraw-Hill/Irwin-Deborah Hinkle, Microsoft Office 2003 PowerPoint: A Professional Approach, Comprehensive w/ Student CD, New Delhi, 2003.
3. Nellai Kannan, C., MS-Office, Nels Publications, Tamil Nadu, 2002.

SEMESTER – III **COURSE CODE: U16SBE2**

PART – IV: COMPUTER APPLICATIONS - II - DESKTOP PUBLISHING

HOURS: 2 **CREDITS: 2**

UNIT I:

Photoshop Tools : Move, Type, Marquee, Lasso, Crop, Shapes, Healing, Brush, Patch, Cloning Stamp, Eraser, Gradient, Blur, Smudge, Dodge, Pen, Eye Dropper, Patch selection and Zoom tool.

Layer: New layer, Layer set, Duplicate layer, Rasterize and Merge down

Layer Styles: Drop shadow, inner shadow, outer glow & inner glow, Bevel and Emboss, Gradient overlay, Stroke. Text formatting

UNIT II:

File: Save, File formats, Page set up.

Edit: Check spelling, Copy merged, Fill, Transform, Define pattern.

Image: Motion blur, Twirl, lens flare, Glowing edges, lighting effects, solarize, water paper, Stained glass, Mosaic Tiles.

Window: Character and Paragraph settings.

COREL DRAW:

UNIT III:

Drawing Tools: Pick, Shape, Knife, eraser, Smudge, Roughen brush, free transform, Zoom ,hand, Free hand, Bezier, Artistic, Pen, Poly line, Point, Interactive connective, Spiral tool.

Colour Tool: Paint Bucket Tool, Eye Dropper, Fill Tools. Fill Options, Stroke Options.

UNIT IV:

Special Effects: 3D effects, Add perspective, Blend, Contour, Artistic media, lens, and Power clip.

Shaping Options: Weld, trim, Intersect.

Text Effects: Format text, bullet, and fit text to path, align and straighten, spell check.

File Menu: Save, Save as, Import, Page set Up.

PAGE MAKER:

UNIT V:

Page Maker Tools: Pointer, Rotate, Line, Rectangle, Ellipse, Polygon, Hand, Text, Crop, Rectangle frame tools. Text layout, Style and Objects: Alignments, Styles, fill, frame options, Stroke, Group, Lock, unlock, mask, polygon settings character and paragraph settings.

Text Editing: Edit story: Undo, Redo, Cut, Copy, Paste, paste Special, Spelling check and Find.

File: Page set up, save, Save as.

TEXTBOOKS

1. CorelDraw IN Simple Steps – Shalini Gupta Corel DRAW Bible - DEBORAH MILLER
2. Teach Yourself Adobe Photoshop – Rose Carla Adobe Photoshop Cs Classroom in a Book by Adobe Press.

3. Using Microsoft Word - Asmita Bhatt Pagemaker In Easy Steps - Scott Basham Ctoa Material By Genesis.

SEMESTER – III **COURSE CODE: U16SBE3P**

PART – IV: COMPUTER APPLICATIONS – II PRACTICAL (DTP LAB)

HOURS: 2 **CREDITS: 2**

OFFICE AUTOMATION & DESKTOP PUBLISHING LAB

UNIT I:

Office Automation

1. MS – Word: Text Formatting, Mail Merge
2. Ms – Excel: Implement the Statistical & Mathematical Function (Using Min ,Max, Median, Average, Standard Deviation, Correlation, Logical 'if' Condition) for the given

   data, Prepare a Chart for a given Data using Pie diagram / Histogram

UNIT II:

Photoshop

3. Design a College Broacher / Birthday Card.
4. Cropping, rotating and Overlapping the image.
5. Create a single image from Multiple image.
6. Creating an image with multilayer's.

UNIT III:

Corel Draw

7. Design a Visiting Card \ Greeting Card using Draw & Text tools.
8. Create a logo for a Company \ College.

UNIT IV:

Page Maker

9. Type and format a letter using text tool.
10. Prepare a Invitation for College Day /Sports Day.

SEMESTER – I **COURSE CODE: U16ES**

PART – IV: ENVIRONMENTAL STUDIES

HOURS: 2 **CREDITS: 2**

UNIT I:

Environment and Natural Resources: Definition, scope, importance of Environmental Studies - Need for public awareness. Natural resources — classification - Associated problems a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification • Role of an individual in conservation of natural resources • Equitable use of resoureces for sustainable lifestyles.

UNIT II:

Ecosystems • Concept of an ecosystem • Structure and function of an ecosystem • Producers, consumers and decomposers • Energy flow in the ecosystem • Ecological succession • Food chains, food webs and ecological pyramids • Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT III:

Biodiversity and its conservation • Introduction — Definition: genetic, species and ecosystem diversity • Biogeographical classification of India • Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values • Biodiversity at global, National and local levels • India as a mega-diversity nation • Hot-sports of biodiversity • Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts • Endangered and endemic species of India • Conservation of biodiversity In-situ and Ex-situ conservation of biodiversity

UNIT IV:

Environmental Pollution Definition • Cause, effects and control measures of a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards • Solid waste Management : Causes, effects arid control measures of urban and industrial wastes • Role of an individual in prevention of pollution • Pollution case studies • Diaster management floods, earthquake, cyclone and landslides.

UNIT V:

Social Issues and the Environment • From Unsustainable to Sustainable development • Urban problems related to energy • Water conservation, rain water harvesting, watershed management • Resettlement and rehabilitation of people; its problems and concerns. Case Studies • Environmental ethics: Issues and possible solutions. • Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies • Wasteland reclamation • Consumerism and waste products • Environment Protection Act. •

Air (Prevention and Control of Pollution) Act. • Water (Prevention and control of Pollution) Act • Wildlife Protection Act • Forest Conservation Act • Issues involved in enforcement of environmental legislation. • Public awareness.

TEXTBOOKS

1. Ekambaranatha Ayyar.M. and T.N. Ananthakrishnan, 1992. Manual of Zoology Vol. 1 [Invertebrata], parts I and II.S. Viswanathan (Printers and Publishers) Pvt. Ltd; Madras.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Pubi. Ltd. Bikaner.
3. Sharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad.
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc.
5. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico PubI. House, Mumbai,
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down to Earth, Centre for Science and Environment (R)
9. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press.
10. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
11. Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press
12. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi.
13. Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition.
14. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
15. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
16. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA.
17. Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Pubi. Co. Pvt. Ltd.
18. Sharma B.K., 2001. Environmental Chemistry. Geol Pubi. House, Meerut
19. Survey of the Environment, The Hindu (M)
20. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)

21. Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
22. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co.Philadelphia, USA

(M) Magazine (R) Reference (TB) Textbook

SEMESTER – IV **COURSE CODE: U16VE**

PART – IV: VALUE EDUCATION

HOURS: 1 **CREDITS: 2**

UNIT I:

PHILOSOPHY OF LIFE Human Life on Earth (Kural 629), Purpose of Life (Kural 46) Meaning and Philosophy of Life(Kural 131, 226) The Law of Nature (Kural 374) Glorifying All form of Life in this Universe (Kural 322, 327) – Protecting Nature /Universe (Kural 16, 20, 1038)

UNIT II:

INDIVIDUAL QUALITIES Basic Culture (Kural 72, 431) Thought Analysis (Kural 282, 467, 666) Regulating desire (Kural 367), Guarding against anger (Kural 158, 305, 306, 314), To get rid of Anxiety (Kural 629), The Rewards of Blessing (Kural 3), Benevolence of Friendship (Kural 786), Love and Charity (Kural 76), Self – tranquility/Peace (Kural 318)

UNIT III:

SOCIAL VALUES (INDIVIDUAL AND SOCIAL WELFARE) Family (Kural 45), Peace in Family (Kural 1025), Society (Kural 446), The Law of Life (Kural 952), Brotherhood (Kural 807) , The Pride of Womanhood (Kural 56) Five responsibilities/duties of Man : a) to himself, b) to his family, c) to his environment, d) to his society, e) to the Universe in his lives (Kural 43, 981), Thriftness (Thrift)/Economics (Kural 754), Health (Kural 298), Education (Kural 400), Governance (Kural 691), People's responsibility/ duties of the community (Kural 37), World peace (Kural 572)

UNIT IV:

MIND CULTURE Mind Culture (Kural 457) Life and Mind - Bio - magnetism, Universal Magnetism (God – Realization and Self Realization) - Genetic Centre – Thought Action – Short term Memory – Expansiveness – Thought – Waves, Channelising the Mind, Stages - Meditation (Kural 261, 266, 270), Spiritual Value (Kural 423)

UNIT V:

TENDING PERSONAL HEALTH Structure of the body, the three forces of the body, life body relation, natural causes and unnatural causes for diseases (Kural 941), Methods in Curing diseases (Kural 948, 949) The Five units, simple physical exercises.

TEXTBOOKS

1. Philosophy of Universal Magnetism (Bio-magnetism, Universal Magnetism) The World Community Service Centre Vethatri Publications (for Unit IV)
2. Pope, G.U., Dr. Rev., Thirukkural with English Translation, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613004 (for All Units)
3. Value Education for Health, Happiness and Harmony, The World Community Service Centre Vethatri Publications (for All Units)

SEMESTER – V **COURSE CODE: U16SS**

PART – IV: SOFT SKILLS

HOURS: 2 **CREDITS: 2**

UNIT I:

Know Thyself / Understanding Self Introduction to soft skills self discovery – Developing positive attitude – Improving perceptions – Forming values.

UNIT II:

Interpersonal Skills/ Understanding Others Developing interpersonal relationship –Team building –group dynamics –Net working- Improved work relationship

UNIT III:

Communication Skills/ Communication with others Art of Listening –Art of reading –Art of speaking –Art of writing –Art of writing emails-e mail etiquette

UNIT IV:

Corporate Skills/ Working with Others Developing body language –Practising etiquette and mannerism – Time management – Stress management.

UNIT V:

Selling Self/ Job Hunting Writing resume /cv-interview skills – Group discussion –Mock interview Mock GD –Goal setting –Career planning

TEXT BOOKS

1. Meena. K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills: A Road Map to Success) P.R. Publishers & Distributors, No, B-20 &21, V.M.M Complex, Chatiram Bus Stand, Tiruchirapalli -620 002. (Phone No: 0431-2702824: Mobile No: 94433 70597, 98430 7442) Alex K. (2012)
2. Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi -110 055. Mobile No: 94425 14814(Dr.K.Alex)

REFERENCE BOOKS

1. Developing the leader within you John C Maxwell
2. Good to Great by Jim Collins
3. The Seven habits of highly effective people Stephen Covey
4. Emotional Intelligence Daniel Goleman
5. You can Win Shive Khera

Principle centred leadership Stephen Covey

SEMESTER – VI **COURSE CODE: U16GS**

PART – V: GENDER STUDIES

HOURS: 1 **CREDITS: 1**

UNIT I:

Concepts of Gender: Sex-Gender-Biological Detertninism- Patriarchy- Feminism -Gender Discrimination -Gender Division of Labour -Gender Stereotyping-Gender Sensitivity - Gender Equity —Equality-Gender Mainstreaming Empowerment

UNIT II:

Women's Studies Vs Gender Studies: UGC's Guidelines - VII to Xl Plans- Gender Studies: Beijing Conference and CEDAW-Exclusiveness and Inclusiveness.

UNIT III:

Areas of Gender Discrimination: Family Sex Ratio-Literacy -Health -Governance Religion Work Vs Employment- Market - Media - Polities Law Domestic Violence — Sexual Harassment — State Policies and Planning

UNIT IV:

Women Development and Gender Empowerment: Initiatives International Women's Dcca4e - International Women's Year - National Policy for Empowerment of Women - Women Empowerment Year 2001- Mainstreaming Global Policies.

UNIT V:

Women's Movements and Safeguarding Mechanism:— In India National / State Commission for Women (NCW) - All Women Police Station Family Court- Domestic Violence Act - Prevention ofSexual Harassment at Work Place Supreme Court Guidelines - Maternity Benefit Act - PNDT Act - Hindu Succession Act 2003 Eve Teasing Prevention Act - Self Help Groups 73 and 74 Amendment for PRIS.

TEXTBOOKS

1. Bhasin Kamala, Understanding Gender: Gender Basics, New Delhi: Women Unlimited 2004
2. Bhasin Kamala, Exploring Masculinity: Gender Basics, New Delhi: Women Unlimited, 2004
3. Bhasin Kamala, What is Patriarchy? : Gender Basics, New Delhi: Women Unlimited, 1993
4. Pernau Margrit Ahmad Imtiaz, Reifeld Hermut (ed.,) Family and Gender: Changing Values in Germany and India, New Delhi: Sage Publications, 2003
5. Agarwal Bina, Humphries Jane and Robeyns Ingrid (ed.,)
6. Capabilities, Freedom, and Equality: Amartya Sen's Work from a Gender Perspective, New Delhi: Oxford University Press, 2006

7. Rajadurai.S.V, Geetha.V, Themes in Caste Gender and Religion, Tiruchirappalli: Bharathidasan University, 2007 Misra Geetanjali, Chandiramani Radhika (ed.,)
8. Sexuality, Gender and Rights: Exploring Theory and Practice in South and Southeast Asia, New Delhi: Sage Publication, 2005 Rao Anupama (ed.,)
9. Gender &Caste: Issues in Contemporary Indian Feminism, New Delhi: Kali for Women, 2003
10. Saha Chandana, Gender Equity and Gender Equality: Study of Girl Child in Rajasthan, Jaipur: Rawat Publications, 2003
11. Krishna Sumi,(ed.,) Livelihood and Gender Equity in Community Resource Management New Delhi: Sage Publication, 2004
12. Wharton .S Amy, The Sociology of Gender: An Introduction to Theory and Research, USA: Blackwell Publishing, 2005.
13. Mohanty Manoranjan (ed.,) Class, Caste, Gender: Readings in Indian Government and Politics- 5, New Delhi: Sage Publications, 2004.
14. Arya Sadhna, Women, Gender Equality and the State, New Delhi: Deep & Deep Publications, 2000.