CENTRAL COUNCIL OF INDIAN MEDICINE

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE

1. SIDDHA MARUTHUVA ADIPPADAI THATHUVANGALUM VARALAARUM (HISTORY & FUNDAMENTAL PRINCIPLES OF SIDDHA MEDICINE)

I. Three primordial, eternal entities and their siddhaanthic theories (Pathi, Pasu, Paasam).
(1) Pathi (Almighty):
a) Definition and description of Pathi, existence of Pathi based on Epistemology (Alavai).
b) Nine divine manifestations of Pathi (Thirumenikal). i.e.
1) Sivam 2) Sakthi 3) Naatham 4) Vindhu 5) Sadaasivam 6) Maheswaran 7) Ayan 8) Ari 9) Aran.
c) Five divine powers of Pathi:-
1) Paraasakthi 2) Aadhisakthi 3) Gnaana Sakthi 4) Itchaa Sakthi 5) Kriyaasakthi.
d) Study of cosmic play (Thirukoothu).
(2) Pasu (Soul):
Definition and description of Pasu,
i.e., distinction between pathi and pasu - three kinds of soul - seven kinds of creation - four kinds of birth - Tholkaappiyer's classification based on senses.
(3) Paasam (Bondages):
Definition, description and classification
i.e., Aanavam, Kanmam, Maayai and Thriodaanam
Classification of Maayai:-
1) Sutha Maayai: (Siva thathuvam) -5, Pure evolutes of Maayai:
Sivam - Sakthi - Sadaasivam - Easwara - Sudhavidhai.
2) Asutha Maayai: (Vidyaa thathuvam) - 7 - Impure evolutes of Maayai:
Kaalam - Niyathi - Kalai - Araagam - Vidhai -Puruden - Maayai.
3) Prakruthi Maayai: (Aanma Thathuvam) – 24, peculiar properties of soul:
Thanmathirais -5, Bootham -5, Gnana indriyam -5, Kanmendriyam-5, Anthakaranam- 4.

II. Deekai (Initiation towards the highest goal of life).
a) Samaya Deekai b) Vishesha Deekai c) Niruvaana Deekai.

III. Epistemology (Alavai) - 10 types. Clinical Application – 5 Examples.
1) Perception (kaandal), 2) Inference (Karuthal), 3) Testimony (Urai), 4) Non-existence (Abaavam), 5) Deduction (Porul), 6) Analogy (Oppu), 7) Inference by exception (Ozhibu), 8) Co-existence (Unmai), 9) Tradition (Iytheekam), 10) Natural inference (Iyalbu).

IV. Different schools of thought regarding the creation of Universe -
Relation between macrocosm and microcosm (Andathil Ullathe Pindam).

V. Five element theory (Iymbootha Kolgai).
Creation of five elements - Properties of five elements - fivefold combination and its description (Panchabootha Panchikaranam) - application of five element theory in Siddha treatment aspect.

VI. 96 Fundamental Principles (Thathuvams) and its different concepts i.e.,
Sivaprakaasa Kattalai - Thiruvaalavai Kattalai - Siddhaanta Kattalai - Vedaantha Kattalai - Thathuva Deepikai - Yugimuni's concept.

Bootham - 5 (five elements) - Pori - 5 (Sense organs) - Pulan - 5 (Perception by the sense organs) - Kanmendriyam - 5 (Motor organs) - Gnana Indriyam - 5 (The inner mechanism responsible for the perception of five senses) - Karanam – 4 (four intellectual faculties) - Arivu - 1 (Self-realization) - Naadi - 10 (Vital channel) - Vaayu - 10 (Vital forces) - Aasayam - 5 (Visceral cavities) - Kosam - 5 (fivesheeths) - Aathaaram - 6 (Six stations of soul) - Mandalam - 3 (Three regions) - Malam 3 (Three principles of moral evil) - Thodam – 3 (Three humours) - Eadanai - 3 (Three physical bindings) - Gunam - 3 (Three cosmic qualities) - Vinai - 2 (Acts) - Raagam - 8 (Eight passions) - Avasthai - 5 (Five states of consciousness).

VII. Three humoural theory (Uyir Thaathukkal) :
Vali, Azhal and Iyam.
Predominant locations - Properties - Physiological functions - Abnormal functions - Increased and decreased features

VIII. Seven Physical constituents (Udal Kattukal) :
Saaram (Primary nourishing juice) - Chenneer (blood) - Oon (muscle) - Kozhuppu (fat) - Enbu (Bone) - Moolai (Bone marrow) - Suckilam / Suronitham (Sperm / Ovum).
Description about 7 physical constituents i.e., Normal function, increased and decreased features.

IX . Five basic properties of Drug:
Suvai (Taste) - Gunam (Characters) - Veeriyam (Potency) - Vibaavam (post absorptive tastes) - Prabaavam (Specific action).
Taste- relations with five elements- features of imbalanced intake of six tastes.
Maruthugalin vagaipaadugal with examples

X. Definition and description of the following:-
1. Attamaa Sithigal
2. Thirukkural (Marunthu Athikaram)
3. Rasavaatham (Alchemy).
4. Muppu.
5. Kaayakalpam (Elixir Science).

XI. History of Tamil Nadu including three Tamil Academies & Ancient Religious Traditions of Tamils (Arusamaiyakolgai)
XI. Chuvadi Iyal.
A. MANUSCRIPTOLOGY
1. Introduction to Manuscriptology
2. History of Editing Palm leaf Manuscripts with special reference to Tamil
3. Palm leaf Manuscripts and Paper Manuscripts Editing
4. Application of Computer in Editing

B. EDITING
1. Basics of Book Editing
2. History of Book publishing with special reference to Tamil
3. Proof Reading - Lay out
4. Book Production
5. Use of Computer in Editing

C. PROJECT WORK
Candidates shall have to undertake a field work regarding copying of Inscriptions or Editing a Plam leaf Manuscript or Editing a Paper Manuscript. The project work has to be submitted to the Head of the Department.

XII. History of Siddhars:-

Agasthiyar - Thirumoolar - Therayar - Yugimuni - Bohar - Sattamuni - Nandhidevar - Raamadevar - Dhanvanthri – Konganavar - Karuvoorar - Kaalanginadhar - Pulippaani - Paampaatti Siddhar - Macchamuni - Romarishi - Koorakkar - Idaikaadar - Sundaraanandhar - Thiruvalluvar - Agappei Siddhar - Kuthambai Siddhar – Sivavaakkiar - Azhuganni Siddhar - Pulathiar.

XIII. Attaanga Yogam:-

Iyamam - Niyamam - Aasanam - Pranaayaamam - Prathiyaakaram - Dhaaranai - Dhiyaanam - Samaadhi.

XIV. Encyclopaedia of Siddha Medicine

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Thotrakirama Araichiyum Siddha Maruthuva Varalarum, (Tamil), The Directorate of Indian Medicine and Homoeopathy, Govt. of Tamilnadu, Chennai. (2005)	Dr.K.S.Uttamarayan, H.P.I.M,
2.	Siddha Maruthuvanga Churukkam (Tamil), The Directorate of Indian Medicine and Homoeopathy, Chennai (2005)	Dr.K.S.Uttamarayan, H.P.I.M,
3.	Siddha Maruthuva Varalaru, (Tamil), International Institute of Tamil Studies, Chennai (2008)	Anaivari Aananthan
4.	Thenindhiya Maruthuva Varalaru, (Tamil) International Institute of Tamil Studies, Chennai (2008)	Ra. Niranjana Devi
5.	Suvatiyiyal (Tamil) International Institute of Tamil Studies, Chennai (1991)	Dr. P. Subramanian
6.	Fundamentals of manuscriptology, (English), Thiruvananthapuram Dravidian linguistics association (2003).	Visalakshy, P.
7.	Introduction to Manuscriptology, (English), Sharada Publishing House, Delhi 1996.	R S Shiva Ganeshamurthy
8.	Siddha Medical Manuscripts in Tamil, (English), International Institute of Tamil Studies, Chennai (1984)	Madhavan. V.R
9.	Thamizhil maruthuva ilakiyangal – or aaivu (Tamil) Poonkodi Publications, Chennai	Dr. R. Vaasudevan
10.	Pandai thamizhaga varaivukalum kuriyeedukalum (Tamil) International Institute of Tamil Studies, Chennai (2004)	Raasu. Pavunthurai
11.	Aasivagam Ennum Tamizhar Anuviyam (Tamil) Manitam Pathipagam, Trichy-21 (2013)	Neduncheliyan K
12.	Thamilar Varalaaru, (Tamil) Thamilman Pathippagam, Chennai (2000)	Thevaneya Paavaanar
13.	Siddha Maruthuva Moola Thathuvam (Tamil) Sidha Maruthuvam Valarchi Kazhagam, Jaffna, Srilanka (2002)	S. Sivashanmuga raja
14.	Siddha Dossier, CCRS, Dept. of AYUSH, New Delhi (2013)	-

Online Material

1. தமிழ் மருத்துவ வரலாற்றுத் தொன்மைகள், முனைவர் இரா. வாசுதேவன்
   http://ta.wikisource.org/s/bn
2. சுவடியியல் அறிமுகம்
   http://kovaimani-tamilmanuscriptology.blogspot.in/2012_04_01_archive.html
3. பேராசிரியர்.முனைவர்.இரா.மாதவன் – ஓலைச்சுவடி ஆய்வுகள்
   http://www.tamilheritage.org/manulogy/madavan.html
4. Religious Traditions of the Tamils (Prof. A. Velupillai)
   http://tamilelibrary.org/teli2/archives/19

Other resources

DVD

Historical Atlas of South India : a joint effort of French Institute of Pondicherry and the Tamil University, Thanjavur Reference URL: *http://www.ifpindia.org/histatlas/*

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2. TAMIL LANGUAGE

Objective:

To acquire knowledge to understand the contents that is available in classical Tamil Siddha literature.

COURSE CONTENT AND SYLLABUS

Unit : 1 Exercises and drills in the spoken and written variety

a) Alphabets in Tamil
b) An intensive course in Tamil, CIIL – MYSORE – by Dr.S. Rajaram
c) Subhramanian V.I. & Veeraswamy T.V., 1973, "Intensive course in Tamil", Dravidian Linguistics Association, Thumba, Trivandrum.

Unit : 2 Exercise for Pronunciation

a) Tamil alphabets – Classification – Special features – Maththirai (Syllabi)
b) Tamil Words – Loan words – its written form – common words in Tamil and Regional language(viz. Malayalam)

Unit : 3 Formation of words and sentences and study of Basic grammer on the functional level

a) Chol (word) – Peyar (Name), Vinai (Verb), Idai (clitics) etc.(Peyar (Name) – Gender, number & case; Vinai (Verb)- Kaalam (Tense) Orumai (Singular), Panmai (Plural)
b) Thodar (syntax)/Vaakkiyam (Sentence), Kaalam (Tense), Orumai (Singular), Panmai (Plural), Ezhuvaai (Subject), Payanilai (Predicate), Cheyappaduporul (Object). (It is to understand the language structure).
c) Selected Tamil Proverbs (10)

Unit : 4 Study of selected prose and poetry in Tamil and Siddha literature

POETRY

(Poems selected only for reading meaningfully and for memorising)

a) Name of the book : Malarum maalaiyum
Author : Kavimani
Title : Pasuvum kantrum
Lines : Thottathil meythu ……
……kantrukkuty. (2 stanzas)

b) Pieces from Folk songs (Tamil)
1) Padaku 2) Elelankadi Elelo

c) Name of the book : Bhaarathiyaar kavithaikal
Author : Subramaniya Bhaarathiyaar
Title : Paappaa paattu
Lines : Odi vilayadu pappa ……

…….Vazhakkappaduthikkollu pappa (6 stanzas)

d) Title : Kontrai venthan (15 Lines)
Author : Auvaiyaar

e) Name of the book : Thirukkural
Author : Thiruvalluvar
Title : "Marunthu" Athikaram (10 verses)

f) Name of the book : Maruthuva vatha yoga gnana satthiram
Lines : " Aathikaalathilae thillayilae …….
…….chernthaner emaikkaakavae"

g) Name of the book : Yugi chinthaamani
Lines : " Uruthiyam poothathi …….
…….uraikkak kelae"

h) Name of the book : Chithar Padalkal
Author : Kovinthan
Lines : Thunaichiru…… (27)
"Ettumalai……" (28)

j) Name of the book : Thirumanthiram
Author : Thirumoolar
Title : Marunthu
: " Maruppathu udal noi…….
…….maruntheńalamae"

k) Name of the book : Siddha Maruthuva Chirappu
Author : Dr. R. Thiagarajan
Title : Ashtanka yokam
Lines : "Eyama …….
…….maavathumaame"

l) Name of the book : Siddha Maruthuvaanka Churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Udal Aimpoothakkoorupaattaiyum Udaiyathu Enal.
Lines : "Paarappa…….
…….Lapamatha Mohamacham"

m) Name of the book : Siddha maruthuvanka churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : lympootham – Arusuvai thodarpu
Lines : "Mannudane …….
…….uraittha maraiye"

n) Name of the book : Siddha maruthuvanka churukkam
Author : Dr. C.S. Uthamarayan – H.P.I.M.
Title : Pathinaanku Vethankal
Lines : "Pathinaanku…….
: …….swasamaame"

<u>PROSE</u>

a) Name of the book : Siddharkal charithram

	Author	:	Chollin selvan
	Chapter	:	Brahmamuni, Korakkar
b)	Name of the book	:	"Lemuria allathu Kumari Kandam"
	Chapter	:	Kumari nadu pattriya Tamil nool kurippukal
	Author	:	Panmozhi pulavar K.Appathurai.
c)	Name of the book	:	Pattukkottai Kaliyana Sundaram Padalkal
	Author	:	KunRakkudi Adikalaar
	Chapter	:	Preface of Pattukkottai kaliyana Sundaram Padalkal
d)	Name of the book	:	Nalla Theerppu (An eloquent speech of C.N. Anna Durai)

Unit : 5 Study of History of siddha medicine – Selected portion from the Siddha literature.

Topics:- Siddharkal enpor yaar?- Pathinen Siddharkal – Navanaatha Siddharkal – Siddha Maruthuvathin Chirappukkal – Siddha Maruthuva Varalaru in brief – Iyankum Porudkalum Iyankaa Porudkalum.(who are Siddhars'; Eighteen Siddhars – Navanatha Siddhars – The importance of Siddha medical practices- Brief history of Siddha medical practices – movable and immovable things)

Unit : 6 Exercises in narration / description of a story or an event in a paragraph.

Unit : 7 Translation from Tamil to Regional language or English – and Vice versa.

References Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Thottakkirama aaraichiyum maruthuva varalaarum.	Dr. Uthamarayan
2.	Siddha maruthuvanga churukkam.	Dr. Uthamarayan
3.	Siddha vaidhya thirattu.	Dr. Uthamarayan
4.	Pathinen siddhargal varalarum Padaitha noolgalum.	Murugesan
5.	Siddhargal, Thamarai noolagam, Chennai – 26.	-

Note: Internal Oral Test to be conducted at the end of the course.

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3. COMMUNICATIVE ENGLISH

Objective of the Course

To enable the students of Siddha medicine, to write and speak in flawless English.

To acquaint the students with Basic English grammar so that they may express their ideas in correct English.

Syllabus

The syllabus is divided into four parts namely Grammar, Vocabulary, Spoken English and Written communication.

India being a multi-lingual country, the communication ability in English will help the students to spread the message of Siddha medicine nationally and internationally.

A good command of English will help the students in their research programmes.

UNIT I

Grammar

- Components of a sentence
- Positive and Negative statements
- Interrogative statements
- Verb and Tense forms
- Voice
- Reported Speech
- Common errors

Vocabulary

- Proper use of words, question words
- Idioms and phrases
- Words commonly misused

Spoken English

- Oral Exercises given at the end of every lesson
- Teaching the use of dictionaries
- Using words in their own sentences

UNIT II

Written communication

- Letter writing
- Précis writing
- Expansion of proverbs using the hints
- Story writing using given hints
- Comprehension Exercises
- Dialogue writing

There are about 85 lessons covering all the objectives stated. Two or more skills are interwoven in a single lesson. The following is the broad outline of topics to be handled.

Details of the components to be included for the exam and the marks allotted.

GRAMMAR		
1.	Proper usage of tense, present, past, future etc	5 marks
2.	Agreement of verb with subjects (singular, plural,)	5 marks
3.	Affirmative into negative and question	5 marks
4.	Preposition	5 marks
5.	Articles	5 marks
6.	Conjunctions (so that, too .to, unless, if, since, for etc)	5 marks
7.	Voice	5 marks
8.	Direct and Indirect Speech	5 marks
9.	Adverb, adjective (Using them in sentences of their own)	5 marks
10.	Rewriting sentences without errors	5 marks
11.	Using question words and question tags	10 marks
	Total	60 marks
CONTINUOUS WRITING		
1.	Letter Writing	5 marks
2.	Precise	5 marks
3.	Comprehension Poem	5 marks
4.	Comprehension Passages	5 marks
5.	Expansion of hints - Proverbs	5 marks
6.	Story Building with hints	10 marks
7.	Dialogue writing	5 marks
	Total	40 marks

The following is the broad suggestion of topics which can be handled in classes with suitable amendment. Exercises based on the topics also have been provided which can be used with addition of extra material by the creative teacher.

Lesson 1	Simple Present Tense
Lesson 2	Present Tense
Lesson 3	Present Tense
Lesson 4	Present Tense
Lesson 5	Present Tense Question form
Lesson 6	Present tense negative statements
Lesson 7	Answers (positive and negative) to the questions in present tense.
Lesson 8	Present Tense - Oral drill in interrogative (question) and negative sentences in present tense.
Lesson 9	Revision
Lesson 10	Simple past tense

Lesson 11	Simple Past
Lesson 12	Past Tense
Lesson 13	Past tense..Question (Interrogative)
Lesson 14	Past tense – affirmative (yes) and negative (No) answers to the questions.
Lesson 15	Past tense –Affirmative and negative replies to the questions
Lesson 16	Past Tense ---Statements and Questions
Lesson 17	Past Tense Revision
Lesson 18	Present perfect tense
Lesson 19	Present perfect tense ---Questions
Lesson 20	Past perfect tense
Lesson 21	Past Perfect Tense using 'after' and 'before'
Lesson 22	Past Perfect tense --; Use of 'when' and 'but'
Lesson 23	Present continuous tense
Lesson 24	Present continuous negative
Lesson 25	Past continuous tense
Lesson 26	Past continuous tense questions
Lesson 27	Questions and answers Past continuous tense
Lesson 28	Present Perfect Continuous tense
Lesson 29	Present Perfect Continuous negative
Lesson 30	Present Perfect Continuous tense questions
Lesson 31	Future tense
Lesson 32	Future Tense- Negative
Lesson 33	Verb and tense
Lesson 34	Revision
Lesson 35	Noun
Lesson 36	Verb
Lesson 37	Proper use of Verb
Lesson 38	Revision
Lesson 39	Verb – Mixed Exercise
Lesson 40	Adjectives
Lesson 41	Adverb
Lesson 42	Noun, Verb, Adjective and Adverb
Lesson 43	Article
Lesson 44	Prepositions
Lesson 45	Conjunctions
Lesson 46	So that, too/to
Lesson 47	Exercises in Conjunction—because and although
Lesson 48	Unless and if
Lesson 49	Errors
Lesson 50	Question words
Lesson 51	Can, may, able to
Lesson 52	Voice
Lesson 53	Direct and Indirect Speech
Lesson 54	Revision

UNIT II

1. Letter writing
2. Precise writing
3.A. Expansion of hints - Proverbs
3.B. Expansion of hints - Stories
4.A. Dialogue writing
4.B. Dialogue writing
5.A. Comprehension –Poem
5.B. Comprehension -Passage

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	High school English grammar and composition	Wren and Martin

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4. UYIR VEDHIYIYAL (BIOCHEMISTRY)

1. Chemistry of Carbohydrates:
Functions of Carbohydrates, Classification of Carbohydrates, Classification and biomedical importance of monosaccharides, Reactions of monosaccharides, Classification and biomedical importance of disaccharides, Polysaccharides- Classification, composition and function.

2. Chemistry of Lipids:
Functions of Lipids, Classification of Lipids, Classification of fatty acids, Essential fatty acids, Free radicals and antioxidants, Types and functions of phospholipids, Glycolipids and lipo proteins, Steroids, Micelles , Names and functions of eicosanoids.

3. Chemistry of Proteins :
Functions of proteins, Classification of proteins based on chemical nature and solubility, classification of amino acids based on structure, Structure of proteins primary, secondary , tertiary and quaternary. Biologically important peptides. Plasma proteins: Types and major functions, the complement system.

4. Nucleic acids and Biotechnology:
Watson and cricks structure of DNA, Types and functions of RNA, structure of transfer RNA, Replication of DNA, Definition of transcription, Polymerase chain reaction (PCR), - Principle, technique, applications. Human genome project, Bioinformatics.

5. Purine nucleotides:
Degradation of purine nucleotides, Gout.

6. Metabolism of carbohydrates:
Glycolysis, TCA cycle, HMP shunt pathway, Glycogenesis, glycogenolysis, and Gluconeogenesis. Glucose homeostasis, Diabetes mellitus.

7. Metabolism of proteins:
Transamination, deamination and urea cycle. Biosynthesis of proteins (Translation).

8. Metabolism of Lipids:
Fatty acid oxidation, Ketone bodies, Ketosis. Biosynthesis of fatty acids, Biosynthesis of cholesterol, Degradation of cholesterol, Hypercholesterolemia, Metabolism of HDL, Fatty liver, Obesity.

9. Biological oxidation
Classification of high energy compounds, ATP-ADP cycle, oxidative phosphorylation and electron transport chain, substrate level phosphorylation.

10. Enzymes:
Classification, Factors affecting enzyme activity, Active site, Mechanism of enzyme action, Coenzymes, Diagnostic importance of enzymes, Enzyme pattern in diseases.

11. Digestion and absorption of carbohydrates, proteins and lipids.

12. Haemoglobin:
Structure of haemoglobin, Biosynthesis of heme, Degradation of heme. Clinical significance of Glycosylated Haemoglobin, Jaundice

13. Vitamins:
Fat soluble Vitamins and Water soluble vitamins –food source, RDA, biochemical functions and deficiency, Manifestations.

14. Hormones: Biochemical functions and disorders.

15. Minerals:
Macro Elements and Micro Elements–food source, RDA, biochemical functions and deficiency, Manifestations

16. Metabolism of Xenobiotics (Detoxification).

17. Water and electrolytes:
Functions of water, water turn over and balance, Composition of electrolytes in the body fluids.

18. Nutrition:
Calorie value of food stuffs, Basal metabolic rate, Specific dynamic action, Fibre in nutrition, Balanced diet, protein – Energy malnutrition, Energy requirements.

19. Cancer and AIDS:
Cancer – Etiology and tumour markers. AIDS – Transmission of HIV and Lab Diagnosis.

20. Organ function tests:
Liver function tests, Renal function tests, Thyroid function tests.

PRACTICAL

PART A. Qualitative Analysis:-
I. Reactions of carbohydrates -
1. Reactions of Glucose.
2. Reactions of Fructose.
3. Reactions of Maltose.
4. Reactions of Lactose.
5. Reactions of Sucrose.
6. Reactions of Starch.

II. Reactions of Protein -
1. Reactions of Albumin.
2. Reactions of Peptone.
3. Reactions of Gelatin.
4. Reactions of Casein.

III. Reactions of non protein nitrogenous substances – urea, uric acid, creatinine.

IV. Reactions of Normal Urine.

V. Analysis of abnormal urine.

PART B. QUANTITATIVE ANALYSIS
1. Estimation of Blood Sugar.
2. Estimation of serum total proteins.
3. Estimation of serum cholesterol.
4. Estimation of serum triglycerides.
5. Estimation of serum urea.
6. Estimation of serum uric acid.
7. Estimation of serum creatinine.
8. Estimation of serum bilirubin.
9. Estimation of serum inorganic phosphate.
10. Estimation of serum amylase.
11. Estimation of SGOT.
12. Estimation of SGPT.

PART C: DEMONSTRATION
1. Glucose Tolerance Test with graph (Normal and Abnormal).
2. Paper electrophoresis.
3. Paper chromatography.

PART D: SPOTTERS
1. Calorimeter
2. PH meter
3. Haemoglobinometer
4. Rhyles tube.
5. Spectroscope
6. Centrifuge
7. Electrophoresis
8. Chromatography
9. Osazones
10. Semi auto analyzer

PART E: CASE REPORTS
1. GTT Graph
2. Renal Glycosuria
3. Acute myocardial infraction
4. Jaundice
5. Gout
6. Hyperthyroidism
7. Vitamin D deficiency
8. Renal failure
9. Kwashiorkor
10. Hypercholesterolemia.

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Biochemistry	U.Satyanarayana, U.Chakrapani
2.	Text book of biochemistry	D.M. Vasudevan, Sreekumari. S
3.	Biochemistry	Pankaja Naik
4.	Harper's Illustrated Bio - Chemistry	
5.	Manual of practical medical biochemistry	Evangeline Jones. M.D.
6.	Practical text book of biochemistry	D.M. Vasudevan, Subir Kumar das

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5. MARUTHUVA THAVARAIYAL (MEDICINAL BOTANY AND PHARMACOGNOSY)

Chapter - I:

Definition - History and importance of Medicinal plants in Siddha science

Plant biology and Medicinal uses of the following groups:

Thallophytes, Bryophytes, Pteridophytes and Gymnosperms.

Study of Life-cycle of the following: Gracilaria, Penicillium, Parmelia and Dryopteris.

Chapter-II:

Taxonomy of Angiosperms- Natural system of classification (Bentham and Hooker)

Herbarium Techniques

Diagnostic vegetative and Reproductive characters, Active principles and Pharmacological constituents of most used plants of the following families:

1. Ranunculaceae
2. Annonaceae
3. Menispermaceae
4. Capparaceae
5. Malvaceae
6. Zygophyllaceae
7. Rutaceae
8. Meliaceae
9. Fabaceae
10. Caesalpiniaceae
11. Mimosaceae
12. Combretaceae
13. Myrtaceae
14. Cucurbitaceae
15. Apiaceae
16. Rubiaceae
17. Asteraceae
18. Apocynaceae
19. Asclepiadaceae
20. Convolvulaceae
21. Solanaceae
22. Acanthaceae
23. Lamiaceae
24. Nyctaginaceae
25. Amaranthaceae
26. Aristolochiaceae
27. Euphorbiaceae
28. Zingiberaceae
29. Liliaceae
30. Poaceae

Chapter – III:

Study of following anatomical structures:

Idealised plant cell structure, cell organelles and cell inclusion

Dicot leaf, stem and root

Monocot leaf, stem and root

Chapter – IV:
Plant Ecology - Plants in relation to environment - Hydrophytes, Mesophytes, Xerophytes and Halophytes conservation of extant and endangered medicinal plants.
Plant tissue culture - culture methods - callus initiation - laboratory organization
Detailed study on phytochemical production in tissue culture methods maintenance of herbal gardens.

PHARMACOGNOSY

Unit-1:
Study of organized raw drugs based on their morphology:
Roots and Rhizomes
Woods
Barks and Galls
Leaves
Flowers
Fruits
Seeds
Whole plant

Unit -2:
Study of unorganized raw drugs:
Gums
Resins and types
Fixed oils

Unit - 3
Phytochemistry (pharmacological actions of the following)
Glycosides-Anthroquinone, Cardiac and Saponins
Alkaloids-Tropane, Quinoline and Indole
Tannins-Hydrolysable and Condensed
Volatile oils-Obtained from the various plant parts
Pigmentation studies-Chlorophyll, Xanthophyll, A.nthocyanin

Unit-4:
Adulteration of rawdrugs & detection, Poisonous plants. Basics of Herbal drug standardization.

Practicals

1. Microscopic slides observation of the non-flowering plant genera mentioned in Unit-I.
2. Identification of Angiosperm families given in Unit II.
3. Field study of various medicinal plants in their original habitat and pigment studies.
4. Submission of Herbarium (20 sheets) & Raw drugs (30).
5. Pigment studies - By paper chromatography method.
6. Anatomical study of plant parts — by section method.
7. Plant Ecology - adaptation - Macroscopic & Microscopic.
8. Raw Drugs - Identification.

References Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	College botany vol. I, II, III, Ed. 2000, New Central Book Agency Pvt Ltd.	Gangulee et al.
2.	Outlines of Botany,. Ed. 2003, S. Viswanathan Publishers.	V. Narayanaswamy et. al.
3.	Plant Ecology, S. Chand & Co.	Sharma
4.	A Text Book of Botany - Angiosperms, Rastogi Publishers, Meerut.	V. Singh, Pande & Jain
5.	Medicinal Botany Vol-I&II (Tamil) - Elangovan Publishers.	Somasundaram
6.	Medical Taxonomy of Angiosperms. Recent trends in Medical used and Chemical constituents. Harishi Publication, Chennai.	S. Shankaranarayanan
7.	Taxonomy of Angiosperms (Tamil) V.K. Publishing House, Chennai	S. Pazhaniyappan
8.	Elements of Biotechnology, Rastogi & Company.	P.K. Gupta
9.	Text Book of Pharmacognosy, Nirali Prakashan, Pune.	Gokhale et. al.
10.	Practical Pharmacognosy, Vallabh Prakasham, Delhi – 34.	Dr. C.K. Koate.

CENTRAL COUNCIL OF INDIAN MEDICINE

SYLLABUS FOR FIRST PROFESSIONAL B.S.M.S. COURSE

6. NUNNUYIRIYAL (MICROBIOLOGY)

General Bacteriology

1. Introduction and History
2. Morphology of Bacteria
3. Growth and Nutrition of Bacteria
4. Classification and Identification of Bacteria
5. Culture media and cultivation methods
6. Sterilization and disinfection
7. Antimicrobial sensitivity

Systemic Bacteriology

1. Gram Positive Cocci - Staphylococcus, Streptococcus, Pneumococcus & Enterococcus
2. Gram Negative Cocci - Meningococci and Gonococci
3. Enterobacteriaceae - Escherichia, Klebsiella, Proteus, Salmonella and Shigella
4. Vibrio cholerae, Pseudomonas, Haemophilus
5. Clostridium tetani, C.perfringens, C.botulinum
6. Bacillus anthracis
7. Corenebacterium diphtheriae
8. Mycobacterium - Tuberculosis and Leprosy
9. Spirochaetes - Treponema & Leptospira
10. Mycoplasma, Chlamydiae & Rickettsiae

Immunology

1. Infection
2. Structure and function of immune system
3. Immunity
4. Antigens
5. Antibodies
6. Antigen - antibody reaction - Agglutination, Precipitation, Immunofluorescence, Coomb's Test, ELISA, Western blot
7. Complement system
8. Hypersensitivity
9. Auto-immunity

Mycology

1. Opportunistic Mycosis
2. Dermatophytes
3. Cryptococcus, Rhinosporidium and Histoplasma
4. Mycotoxicosis and Mycetism

Virology

1. General properties and cultivation of Virus
2. Bacteriophage
3. Pox virus
4. Herpes virus - HSV-I &II
5. Myxovirus - H1N1, Avian flu, Mumps and Measles
6. Corona virus — SARS

7. Polio virus
8. Rabies virus
9. Hepatitis virus (A, B & C)
10. Arbo virus - Chikungunya, Dengue & Rubella
11. Retro virus - HIV

Clinical Microbiology
1. Nosocomial infection
2. UTI
3. Meningitis
4. Bacterial food poisoning
5. PUO
6. Biomedical waste management
7. Vaccines (Bacterial & Viral)

Practical

1. Microscopy - Light, Dark Ground, Fluorescent, Electron
2. Staining - Gram's and AFB staining
3. Culture methods - Streak plate, Anaerobic, RC
4. Bacterial identification - Esch.coli, Klebsiella, Pseudomonas, Vibrio cholerae, Corynebacterium, diphtheriae, Staphylococcus aureus.
5. Serology - WIDAL & VDRL with clinical significance
6. Immunology — ELISA, Latex agglutination
7. Mycology - LPCB mounting
8. Viral model - Rabies, HIV, Orthomyxo & Adeni virus

Reference Books:

S.No.	Name of book, Language, publishers & year of publication	Author
1.	Text Book of Microbiology	Ananthanarayan and C.K. Jayaram Paniker
2.	Text Book of Microbiology	D.R. Arora and B Arora
3.	Medical Microbiology	Robert Cruik Shank