Course curriculum for Second Professional BAMS

(PRESCRIBED BY NCISM)

Rasashastra evam Bhaishajyakalpana

(SUBJECT CODE : AyUG-RB)

(Applicable from 2021-22 batch, from the academic year 2023-24 onwards for 5 years or until further notification by NCISM, whichever is earlier)

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।। आयुषे सर्वलोकानाम् ।।

BOARD OF AYURVEDA
NATIONAL COMMISSION FOR INDIAN SYSTEM OF MEDICINE
NEW DELHI-110058

NCISM

II Professional Ayurvedacharya (BAMS)

Subject Code : AyUG-RB

Summary

Total number of Teaching hours: 450			
Lecture hours(LH)-Theory		150	150(LH)
Paper I	75		
Paper II	75		
Non Lecture hours(NLH)-Theory		300	300(NLH)
Paper I & II	90		
Non Lecture hours(NLH)-Practical			
Paper I & II	210		

Examination (Papers & Mark Distribution)					
Item	**Theory Component Marks**	**Practical Component Marks**			
		Practical	**Viva**	**Elective**	**IA**
Paper I	100	100	70	-	30
Paper II	100				
Sub-Total	200	200			
Total marks	400				

Important Note:-The User Manual II BAMS is a valuable resource that provides comprehensive details about the curriculum file. It will help you understand and implement the curriculum. Please read the User Manual II before reading this curriculum file. The curriculum file has been thoroughly reviewed and verified for accuracy. However, if you find any discrepancies, please note that the contents related to the MSE should be considered authentic.
In case of difficulty and questions regarding curriculum write to cur.imp@ncismindia.org

PREFACE

Ayurvedic physician, Pranabhisara Vaidya, makes efforts for his task of management of diseases and maintenance of health. For this role his tool is Potent medicine and tactful techniques acquired from profound knowledge of classics.

Bheshaja is important in chikitsa chatushpada. Prepared personally or purchased or prescribed, the medicines must be potent. Identity, Purity, Quality, Stability, Safety and Efficacy all factors must be assessed carefully so that extensive therapeutic utility without any adverse drug reaction can be achieved. Education of Ayurvedic Pharmaceutics i. e. Ayurvediya Aushadhi Nirmana Shastra must provide foundation through guidance for academicians, Researchers, entrepreneurs and clinicians. Yogavijyana and prayogavijnyana is that expected foundation. Ayurvedic classics expect yuktijna, siddhahasta, sarva bhaishajya kovid (carak su. 20/22) physician as an outcome of studying Ayurveda.

To achieve the programme outcome of the Professional BAMS course of NCISM , this particular subject contributes a lot by providing thorough multidimensional knowledge in cognitive domain, hands on training of pharmaceutical processing in Psychomotor domain and ethical attitudes towards drug development in affective domain.

. The thought process by which Rasa Bheshaja Yogas reaches yojana- administration is very much important. Dose, Duration, Time and Route of administration, anupana all such factors are unique features of holistic Ayurvedic Practice. Acquiring details of these topics along with practical application with understanding its significance is the course objective of the subject RS& BK. The main Goal is to cater professional Competency in Ayurvedic Pharmaceutics and make them capable to select proper / effective yoga and administer it safely.

It is the need of time to make some addition in the current teaching and learning process of Rasashastra & Bhaishajya Kalpana to make it more relevant, practical and contemporary. New teaching technology tools will certainly be helpful in the effective delivery of knowledge of Rasashastra & Bhaishajya Kalpana. As per the revised regulation, the nomenclature of the subject is Ayurvediya Aushadhi Nirmana Vigyana as paper I and Ayurvediya Aushadhi Prayoga Vigyana as paper II for Second Professional BAMS course.

In this revision, NCISM has tried its best to take Rasashastra & Bhaishajya Kalpana teaching beyond the four walls of the classroom and get it connected with present global needs. For effective content delivery create interest in the subject it becomes evident to teach Rasashastra & Bhaishajya Kalpana with practical demonstrations. In order to facilitate proficiency in pharmaceutical preparation and its application in clinical practice, more non-lecture classes are allotted . Teaching methodology guidelines are provided which shall be followed while teaching, to make baseline uniformity in the process of learning.Activity-based learning will enable the internalization of the concepts and will build a strong platform while learning other subjects of Ayurved.

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Course Code and Name of Course

Course code	Name of Course
AyUG-RB	Rasashastra evam Bhaishajyakalpana

Table 1- Course learning outcomes and matched PO

SR1 CO No	A1 Course learning Outcomes (CO) AyUG-RB At the end of the course AyUG-RB, the students should be able to-	B1 Course learning Outcomes matched with program learning outcomes.
CO1	Demonstrate application of principles of Ayurvediya Aushadhi Nirmana (Ayurvedic Pharmaceutics)	PO1,PO5,PO7
CO2	Demonstrate application of principles of Ayurvediya Aushadhi Prayoga Vigyana (Clinical Pharmacology)	PO1,PO5,PO7
CO3	Prepare Ayurvedic formulations in adherence to quality control parameters for raw materials, in-process and finished products	PO1,PO3,PO4,PO5, PO6,PO7,PO8
CO4	Justify rationality of selection and administration of Ayurvedic formulations	PO3,PO5,PO6,PO7, PO8,PO9
CO5	Demonstrate application of ethical, legal and regulatory aspects of manufacturing and sale of Ayurvedic formulations.	PO2,PO8,PO9
CO6	Appraise research in current and emerging trend in Ayurvedic pharmaceuticals and allied sciences.	PO7,PO9

Table 2 : Contents of Course

Paper 1 Ayurvediya Aushadhi Nirmana Vigyana					
Sr. No	**A2 List of Topics**	**B2 Term**	**C2 Marks**	**D2 Lecture hours**	**E2 Non-Lecture hours**
1	**1.Chronological development of Ayurvediya Aushadhi Nirmana** Definition, chronological development, significance and scope of Rasashastra and Bhaishajya Kalpana. Concept of Rasashala , Rasa-mandapa and Bheshajagara Concept of Rasa-Rasayana Briefing on Indians are first to prepare metal based medicines and Recent development in Ayurvedic Pharmaceuticals.	1	05	2	1
2	**2.Paribhasha (Terminology)** 1. Definition and Importance of Paribhasha 2. Word Derivation- Aushadha, Bheshaja, Kalpana, Kashaya, Pancha kashaya Yoni, Samskara 3.Dravya/Varga Paribhasha- (Classical Names, English names,Chemical Composition/ Formula) A) Rasa, Maharasa, Uparasa, Dhatuvarga, Upadhatu, Ratna, Uparatna, Sudhavarga, Sikatavarga, Lavanavarga, Visha, Upavisha, Kajjali, Mitrpanchaka, Dravaka Gana, B) Sandigdha(Contraversial): Vaikranta, Chapala, Rasanjana, Pushpanjana, Vahnijara, Girisindura, Kankushtha. C) Anupalabdha (Not Available): Rasaka, Sauviranjana D) Krutrima (Artificial): Sasyaka, Gandhaka, Kasisa, Rasanjana, Hingula E) Pratinidhi (Substitute) : Vajrabhave Vaikranta, Suvarna-Suvarna Makshika 4. Prakriya Paribhasha- A) Shodhana: Types of Shodhana, Samanya Shodhana, Vishesha Shodhana, Different techniques used for Shodhana, Swedana, Mardana, Dhalana, Nirvapa, Nirjaleekarana, Nimajjana, Bhavana,Bharjana B) Marana,: Definition, Importance of Marana, Types of Marana- Agnipaka Method, Putapaka Method, Kupipakwa Method, Bhanupaka Method, Swanga Sheeta C) Amrutikarana, Lohitikarana D) Sattvapatana, Shuddhavarta, Beejavarta E) Druti: Definition, Druti lakshana F) Parada Samskara: Definition, Importance, Ashtasamskara Parada Jaranaa, Murchchhana, Names of Parad-Bandhas 5) Pramanikarana Paribhasha (Terms for Standardization)- A) Grahy-Agrahyattva, Siddhilakshana B) Bhasma pariksha: Varitara, Rekhapurnata, Unama,	1	10	8	4

	Slakshnattva, Sukshma, Anjana Sannibha, Dantagre na Kachakacha Bhavati, Varna, Avami, Apunarbhava, Niruttha, Gata Rasattva, Nischandrattva, Niramlattva, Nirdhumattva, Jihvagre adahyamanattva, Dadhi/ Nimbu Pariksha, 6) Puraka Paribhasha (Supplementary)- Rudra Bhaga, Dhanvantari Bhaga7) Mana-Paribhasha- A) Definition, Classical Types B) Classical and Modern- Conversion chart as per AFI, Scientific Metrology C) Essential Kala- mana.				
3	**3.Adharbhuta Siddhanta (Application of fundamental principles)** **Dravya Sangrha and Samrakshana** • Time of drug Collection • General Rules • Specific time for specific plant part collection • Time of the day for drug collection • Collection of Pranija Dravya • Place of Drug collection Bhumi mahabhuta predominance • Places from where drugs should not be collected • Stage of drug collection • Rule of Duplication(Dwiguna Mana Ganana) • Ardra and Shushka Dravya mana • Dravya Sangraha Vidhi and Dravya samrakshana • Rasa, Guna, Virya ,Vipaka, Prabhava**Anukta Visheshokta grahana:** Considering Anukta Dravya **Aushadha Namakarana:** Naming a Preparation **Aushadha Sevana Kala:** Time of Drug Administration **Saveeryata Avadhi** (Shelf life of different kalpana) **Aushadha Matra:**Dosage / Posology **Anupana & Sahapana (Adjuvant)** **Yougika Dravya Siddhanta(Drug Combination)**	1	05	4	2
4	**4.Yantropakaranani- I (Equipments and machineries) Principles involved, currently used yantras, their correlation, utility, and Instruments used in Large scale Production** Dola Yantra Valuka Yantra Puta Yantra Khalwa Yantra Patana Yantra Darvika Yantra Ulukhala Yantra Patala Yantra Kupi Yantra Arkapatana Yantra Pithara Yantra	1	05	6	4

	Sharava Yantra Palika Yantra Sthali Yantra Swedana Yantra Vidyadhara Yantra **Modern Machinery-**Grinder Disintegrator Pulverizer Powder Mixer Mechanical sifter Ball mill Granulator Dryer Tablet compressing machine Pills making machine Coating pan Polishing pan End runner machine Edge runner machine Capsule filling machine Ointment mixer Tube filling machine Sieves & Meshes Liquid filling machine Distillation plant Strip packing machine Pouch filling machine Pyrometer				
5	**5.Yantropakaranani -II (Equipments, fuel and Heating Devices)** **Principle involved, importance of temperature, currently used heating devices utility, quantum of heat and Instruments used in Large scale Production Puta-** Chandra Puta Surya Puta Maha Puta Gaja Puta Varaha Puta Kukkuta Puta Kapota Puta Lavak Puta Budhar Puta Gorvara Puta Valuka Puta Kumbha / Bhanda Puta **Musha** Samanya Musha Crucibles- Silica Mudra	1	05	5	4

	Sandhi Bandhan Material **Koshthi-** Chullika Angar Koshthi Satwapatan Bhrashtri Gas Stove Hot Plate Heating Mantle Induction Stove Hot Air Oven Muffle Furnace- Horizontal and Vertical **Heating Material-** Solid- Kashtha, coal(wooden / stone), Kshara, Lavana, Valuka, Shakrit, Dhanya Drava- Jala/ steam, Taila Indirect heating- Dhanya Rashi, Bhugarbha sthapana				
6	**6.Kalpana Nirmana I (Primary & Secondary dosage forms)** **Definition, classification with suitable examples, reference ingredients, quantity, method of preparation, principle involved, instruments used in small and large scale production, siddhi lakshana, storage, shelf life, modern aspect of related preparation of the following** **Panchavidha Kashya Kalpana (Primary dosage forms):** Swarasa, Kalka, Kwatha, Hima, Phanta **Upaklpana (Secondary dosage forms):** **Kalka:** Churna Kalpana **Kwatha:** Pramathya Kalpana, Paniya Kalpana, Ushnodaka, Ksheera Paka Kalpana, Laksha Rasa, Mamsa Rasa **Hima Kalpana :** Mantha Kalpana, Udaka Kalpana, Panaka Kalpana **Phanta Kalpana:** Arka	1	10	6	4
7	**7.Kalpana Nirmana-II (Method of Preparation of different dosage forms& Dietary Supplements))** **Avaleha** Definition, reference, essential ingredients, general method of preparation, specific rules of avaleha preparation, importance of temperature, siddhi lakshana, shelf life with examples i.e Vasavaleha, Kushmanda avaleha, research updates on Avaleha Kalpana, market survey **Sneha Kalpana** Aims of Sneha Kalpana, definition,reference, essential ingredients, general method of preparation, specific rules of sneha preparation, importance of temperature, gritha murchana, taila murchana, sneha siddhi lakshana, types of snehapaka, Patra(Gandha Paka), time duration to cook sneha preparation, shef life with examples Phala grita and	1	10	5	4

	Ksheerabala Bala Taila, Concept of Avartana, Research updates on snehakalpana, market survey **Sandhana Kalpana** Introduction, significance of sandhana kalpana, classification, difference between Madhya and Shukta Kalpana, general method of preparation, essential ingredients, anukta Mana, sandhana vidhi, observations, Burnig candle test, Lime water Test, important factors in Asava Arishta Preparation like sandhanan patra selection, place for fermentaion, importance of room temperature, sandhana kala, adding of honey, bhasma, prakshepaka dravya, difference between Asava & Arishta, shelf life and alcohol % with examples Draksharista and Usheerasava, Research updates on Sandhana Kalpana, market survey **Pathya Kalpana** Definition , significance of Pathya, types, general, method of preparation Manda, Peya, Yavagu, Vilepi, Anna or Odana Kalpana, Krashara, Yusha, Takra, Khada, Kambalika, Raga, Shadava, Related Research updates, Market survey of Dietary Supplements				
8	**8.Rasa Dravya Parichaya- I** **Synonyms, minerological identification, sources, types, grahya and agrahyata, doshas, shodhana, marana and other processing techniques, Probable Physico-chemical Changes, importance of temperature while processing , yoga, Research updates of the following** **Must to know Drugs** Parada (mercury) Abhraka (Biotite Mica) Makshika (Chalco-pyrite) Shilajatu(Asphaltum Punjabianum) Gandhaka (Sulfur) Gairika(Red Ochre) Kankshi (Alum) Haratala (Orpiment) Manahshila (Realgar) Kampillaka(Mallotus Philippinensis) Navasadara (Ammonium chloride) Hingula (Red Cinnabar) Swarna (Gold) Rajata (Silver) Tamra (Copper) Loha (Iron) Mandur (rust iron) Vanga (Tin) Naga (Lead) Yashada (Zinc) Mukta (Pearl), Pravala (Coral)	2	10	12	4

	Vajra (Diamond) Kaparda (Cowries) Shukti (Oyster Shell) Shankh (Conch Shell) Godanti (Gypsum) Samudraphena (Cattle Fish bone) Kukkutanda twak (Hen's EggShell) Tankana kshara (Borax)				
9	**9.Rasa Dravya Parichaya II** **Synonyms, mineralogical identification, sources, types, grahya and agrahyata, shodhana, marana and other processing techniques with probable chemical reactions, the importance of temperature, yoga, research updates of the following: Desirable to know drugs:** Sasyaka (Peacock ore) Kaseesa (Green Vitriol), Gauri pashana (Arsenic oxide); Trinakanta, Akika(Agate), Sudha (Lime stone), Khatika Ajashthi; Jaharmohara (Serpentine) Dugdhapashana (Talc)	2	5	7	6
10	**10.Rasadravya Parichaya III** **Synonyms, Minerological Identification, sources, types, Grahya, Agrahyata, Shodhana, Marana, Probable Chemical Changes, Properties,dose, Ashuddha/Apakwa Bhasma Sevanajanya Vydhi and their shantyupaya, yoga, Research updates** **Nice to know drugs:** Vaikrantha, Vimala (Iron Pyrite), Chapala Rasaka Anjana Kankustha Agnijara Giri Sindura (Red oxide of Hg) Mriddara shringa (Litharge) Kamsya (Bronze) Pittala (Brass) Vartaloha. Manikya (Ruby) Tarkshya (Emerald) Pushparaga (Topaz) Nilam (Sapphire) Gomeda (Zircon or Cinnamone stone)	2	5	3	6

	Vaidurya (Cats eye) Mriga shringa (Stag horn) Sikata (Silica) Vyomashma (Sangeyashab - Jade) Kousheyashma (Asbestos) Badarshama (silicate of lime)				
11	**11.Kalpana Nirman -III (Method of Preparation of different dosage forms)** **Sharkara Kalpana** • General method of preparation, difference between sharkara kalpana and syrup, importance of temperature, precautions, confirmatory tests, packing, preservation, shelf life with Example of Tulasi Arka Sharkara **Gudapaka** • General Method of Preparation, importance of temperature, precautions, confirmatory tests, packing, preservation, shelf life with Example of ManibhadraGuda, Guda Pippali **Lavana Kalpana** • General Method of Preparation, importance of temperature, precautions, confirmatory tests, packing, preservation, shelf life with Example of Narikela Lavana **Kshara Kalpana** • General Method of Preparation, importance of temperature, precautions, confirmatory tests, packing, preservation, shelf life with Example of Kadali Kshara, chincha Kshara **Ayskriti Kalpana** • General Method of Preparation, importance of temperature, precautions, confirmatory tests, packing, preservation, shelf life with Example Ayaskriti **Lepa Kalpana** • General Method of Preparation, importance of temperature, precautions, confirmatory tests, packing, preservation, shelf life with Example of	2	10	8	6

	Avalgunjadi Lepa, Keshavardhaka Lepa.				
12	**12.Chaturvidha Rasayana** **Introduction, definition, importance, types, Procedure, necessary equipment, Shelf life with following exampleKharaliya Rasayana**: Shwasakuthara rasa and Vatavidwansana rasa **Parpati Rasayana:** Loha parpati and sudha parpati **Kupipakwa Rasayana**: Rasasidhura and Rasa karpura **Pottali Rasayana**: Tamragarbha pottali and Loha grarbha pottali	2	10	4	4
13	**13.Current and emerging trend in Ayurvedic pharmaceuticals** **Cosmetics-Formulation, Regulatory Provisions**Brief Introduction to Cosmetics-Formulation, Regulatory Provisions, Plant Layout and other factory requirements, process used in the manufacture of Cosmetics, Most commonly used cosmetic Raw materials , Control of microbial contamination in the manufacture of cosmetics and Quality Control of cosmetics, Skin Sensitization Sensitivity Testing, In vitro-Tests for Skin Irritation, Quality Control of Raw materials, Intermediates and Finished Products, Stability of Cosmetics**Introduction to Dosage forms**Introduction, Classification of Dosage forms(Solid dosage forms, Liquid dosage forms and Semisolid dosage forms), Need of dosage forms.	3	5	3	4
14	**14.GMP(Schedule T) & Regulatory aspects of Ayurvedic drugs** **Brief overview of following** • **Drug and Cosmetics Act** 1940 and Rules1945 import, manufacture, sale distribution of drugs and cosmetics standards of quality, misbranded, adulterated, spurious drugs and cosmetics as amended from time to time. **New Acts related to Drugs and Devices.** • **Good Manufacturing Practices** (GMP) of ASU Drugs in accordance to Schedule- T **Food Safety and Standards Authority of India** (FSSAI) and **FDA** Approval Drugs.	3	5	2	4
Total Marks			**100**	**75 hr**	**57 hr**

Paper 2 Ayurvediya Aushadhi Prayoga Vigyana					
Sr. No	**A2 List of Topics**	**B2 Term**	**C2 Marks**	**D2 Lecture hours**	**E2 Non-Lecture hours**
15	**1.Aushadhi Prayoga Vigyana** Introduction, Ethymology, Scope of Aushadhi Prayoga vigyanaPrashastha bheshaja Lakshana	1	5	1	2
16	**2.Single drug (Herbal & Mineral)** **Single drug its variety of formulations and their different indications• Chemical/phytochemical composition** **• Pharmacodynamics and pharmacokinetics as per formulation** **• Therapeutic properties** **• Awasthanusara Uses(as applicable)** **• Matra** **• Anupana** **• Pathyapathya** **• Sevana Kala** **• Kala maryada (duration of medication as applicable)** **• Side effects of medication (as applicable)** **• Research updates and clinical evidences for each of the following formulations** **Guduchi** Guduchi Swarasa (Sha.Sam.Ma. Kh. Chp1/7 page 138) Guduchyadi Churna (B.R. Pleehayakrut Rogdhikara) Guduchi Kwatha (B.R. Jwaradhikara) Guduchi Hima (B.R. Chardi Rogadhikara) Guduchi Ghana- Samshamani Vati (AFI Part II Page 183) Guduchi Satva (AFI-Part I, Page 205) Amrutadi Guggulu (AFI-Part III, Page 107) Amritarishta (AFI Part I page 6) **Amalaki** Amalaki Swarasa (Sha.Sam.Ma.Kha.) Amalakyadi Churna (Sha.Sam.M.Kha. Churna kalpana) Triphala Rasayana (Cha.Chi. Rasayana Adhyaya) Chyavanaprasha (AFI Part I page 37) Dhatri Lauha (AFI Part I Page 284) Amalakyadi Gutika (Sha.Sam.Ma.Kha.Vati Kalpana) Phalatrikadi Kwatha (Sha.Sam.Ma.Kha.Kwatha Kalpana) Triphala Ghrita (Sha.Sam.Ma.Kha. Ghrita Kalpana) **Bhallataka** Bhallataka Modaka (B.R. Pleeha-Yakrit Rogadhikara) Bhallataka Ghrita (B.R. Gulma Rogadhikara) Bhallataka Guda (B.R. Arsha Rogadhikara) Bhallatakadi Taila (B.R. Nadivrina Rogadhikara) Bhallataka Avaleha (B.R. Arsha Rogadhikara)	1	10	8	2

	Bhallatakadi Lepa (B.R. Kushta Rogadhikara) Bhallatakadi Kwatha (B.R. Urusthabha Rogadhikara)Note: For Bhallataka additional ashuddha, avidhi sevanajanya vyadhi and their shantyupaya**Gandhaka** Gandhaka churna (SY page 217) Gandhaka Rasayana (AFI-Part II, Page 115) Gandhaka Druti (RRR 3rd Chapter) Gandhaka Taila (R.T. 8th Chapter) Gandhakadya Malahara (AFI-Part II, Page 165) Gandhakadi Lepa (RRS Shiroroga Chikitsa) Gandhaka Vati (B.R. Agnimandya Rogadhikara) **Gairika** Gairika Pradeha (Cha.Chi. Visarpa Rogadhyaya Laghusuta shekhara Rasa (AFI Part II Page 282) Gairikadya Malahara (AFI-Part III, Page 224) Gairikadya Gutikanjana (B.R. Netraroga) Gairika rasakriya (Cha.Chi.26/235) Varnakara lepa (Cha.Chi.25/117)				
17	**3.Single drug(Bhasma, Shuddha & Pishti)** **• Single drug/ formulation and its mode of action in different indications** **•Chemical/phytochemical composition** **• Pharmacodynamics and pharmacokinetics as per formulation** **• Therapeutic properties** **• Awasthanusara Uses(as applicable)** **• Matra** **• Anupana** **• Pathyapathya** **• Sevana Kala** **• Kala maryada (duration of medication as applicable)** **• Side effects of medication(as applicable)** **• Ashuddha apakwa, avidhi sevanajanya vyadhi and their shantyupaya,** **• Research updates and clinical evidences for each of the following formulations:** Abhraka Bhasma Swarna Makshika Bhasma Swarna Bhasma Rajata Bhasma Lauha Bhasma Tamra Bhasma Vanga Bhasma Naga Bhasma Yashada Bhasma Kasisa Bhasma Shuddha Shilajatu Shuddha Gandhaka Shuddha Gairika	2	15	12	6

	Shuddha Kankshi Mukta Pishti & Bhasma Pravala Pishti & Bhasma Vajra Bhasma Kaparda Bhasma Shankh Bhasma Godanti Bhasma Shuddha Tankana Shuddha Kankshi				
18	**4.Aushadhi Kalpa -I (Compound formulations)** **•Chemical/phytochemical composition** **• Pharmacodynamics and pharmacokinetics as per formulation** **• Therapeutic properties and its mode of action in different indications,** **• Awasthanusara Uses(as applicable)** **• Matra** **• Anupana** **• Pathyapathya** **• Sevana Kala** **• Kala maryada (duration of medication as applicable)** **• Side effects of medication(as applicable)** **• Ashuddha apakwa processed , avidhi sevanajanya vyadhi and their shantyupaya,** **• Research updates and clinical evidences for each of the following formulations:** **Kharaliya Rasayana** • Arogyavardhini Gutika : A.F.I. - I, Rasayoga, 20:4, R.R.S. Visarpa Chi. 20/106 • Kumara Kalyana Rasa : A.F.I. - I, Rasayoga, 20:9, B.R. Balaroga / 163 • Garbhapala Rasa : A.F.I. - II, Rasayoga, 16:14,R.T.Sa. Part - I, 140 Chandraprabha Vati : A.F.I. - I, Vati Gutika, 12:10,Sha.Sa.M.7/40 • Pravala Panchamrita Rasa : A.F.I. - II, Rasayoga, 16:37,B.R. Gulma / 139 • Anandbhairava Rasa : A.F.I. - I, Rasayoga, 20:3,R.Sa.Sa.Jwara 2/103 • Yogendra Rasa : A.F.I. - I, Rasayoga, 20:31,B.R. Vatavyadhi / 506 • Laxmivilas Rasa : A.F.I. - I, Rasayoga, 20:39, B.R. Rasayana / 55 • Vasantakusumakara Rasa : A.F.I. - I, Rasayoga,20:42,R.Sa.Sa.Rasayana Vajikarana / 80 • Vasantamalti Rasa : A.F.I. - I, Rasayoga, 20:41, Si.Bhai.Ma.Ma.Jwara / 60 • Brihat Vata Chintamani Rasa : A.F.I. - I, Rasayoga, 20:26,	2	15	16	4

	B.R.,Vatavyadhi/502 • Shankha Vati : A.F.I. - I,Vati Gutika, 12:32,B.R. Agnimandya / 182 • Shwaskuthara Rasa : A.F.I. - I, Rasayoga, 20:49,Yo.Ra., Swasa / Page 373 • Kamadudha Rasa : A.F.I. - II, Rasayoga, 16:9,R.Ta.Sa. Kharaliya Rasayana / 80 • Sutashekhar Rasa : A.F.I. - II, Rasayoga, 16:63,Yo.Ra. Amlapita / Page 125 • Navayasa Loha : A.F.I. - II, Lauha, 17:2,Cha.Sa.Chi.16/70 • Ichchhabhedi Rasa : A.F.I. - I, Rasayoga, 20:5,B.Ra. Udararoga / 84 • Krimikuthara Rasa : A.F.I. - II, Rasayoga, 16:12,R.Ta.Sa.Kharaliya Rasayana / P. 103 **Parpati Rasayana** • Panchamruta Parpati : A.F.I. - I, Parpati, 16:1, B.R.Grahani / 461 • Bola Parpati : A.F.I. - I, Parpati, 16:2, Yo.R.,Pradara / P 842 **Kupipakwa Rasayana** • Swarna Vanga : A.F.I. - I, Kupipakva, 15:9, Rasamruta 3/ 95 • Makaradhwaja : A.F.I. - I, Kupipakva, 15: 2, B. R. Vajikarana 2/ 237 • Sameerpannaga Rasa : A.F.I. - I, Kupipakva, 15:8, A.A.G.S. Part - 4 Page 88 **Pottali Rasayana** • Hemagarbha Pottali : A.F.I. - II, Rasayoga, 16:66, Rasamruta Rasavigyaniya 9/218				
19	**5.Aushadhi Kalpa-II (Compound Drugs/Formulations)** **• Chemical/phytochemical composition** **• Pharmacodynamics and pharmacokinetics as per formulation** **• Therapeutic properties and its mode of action in different indications,** **• Awasthanusara Uses(as applicable)** **• Matra** **• Anupana** **• Pathyapathya** **• Sevana Kala** **• Kala maryada (duration of medication as applicable)** **• Side effects of medication(as applicable)** **• Improperly processed , avidhi sevanajanya vyadhi and their shantyupaya,** **• Research updates and clinical evidences for each of the following formulations**: Dashamoola Kwatha (AFI Part I Page 55) Mahamanjistadi Kwatha (AFI Part I page 59)	3	15	14	2

	Pushyanuga Churna (AFI-Part I, Page 113) Sudarshana Churna (AFI Part I Page 116) Lavana Bhaskara Churna (AFI-Part I, Page 114) Bilvadi Gutika (AFI Part I Page 188) Chitrakadi Gutika (AFI-Part I, Page 186) Sanjivani Vati (B.R. Jwaradhikara) Vyoshadi Vati (AFI Part III Page 253) Bala Chaturbhadra Rasa (B.R. Balarogadhikara) Simhanada Guggulu (AFI-Part I, Page 71) Yogaraja Guggulu (AFI-Part I, Page 69) Chyavanaprashavaleha (AFI Part I page 37) Dadimavaleha (Y.R. Jwaratisaradhyaya) Panchagavya Ghrita (AFI Part I Page 90) Brahmi Ghrita (AFI Part I Page 93) Narayana Taila (AFI Part I Page 138) Neelibhringadi Taila (AFI Part I Page 139) Panchaguna Taila (AFI-Part II, Page 145) Aravindasava (AFI Part I page 7) Ashokarishta (AFI Part I page 8) Kumaryasava (AFI Part I page 10) Kutajarishta (AFI Part I page 10) Gandhakadya Malahara (AFI-Part II, Page 165) Lepa Guti (AFI Part III page 232)				
20	**6.Dosage Forms & Cosmetic Products** Definition of dosage form,-Cosmetics Advantages and disadvantages of currently available dosage forms and cosmetics. Route of their administration. Research updates on modification of classical Ayurvedic dosage forms and relevant case studies.	3	5	5	2
21	**7.Nutraceuticals** **Introduction** **Types, non Indian nutraceuticals and their uses** **Ayurvedic Perspective of Nutraceuticals** **with special reference to dietic preparation, rasayana with one examples for each category , mode of action, nutritional value calculation, research updates and case studies on below mentioned category** **General Health** : Kushmanda avaleha **Pediatric Health**: Preenana Modaka(Kashyapa) **Geriatric Health**: Chavanaprasha avaleha **Reproductive Health**: Phala Grita **Women's health:** Soubhagya shuntipaka, Shatavari grita **Cardio-protective**: Arjuna Ksheerapaka & Rasona ksheera paka **Sports endeavor**: Kharjuradi mantha **Mental health**: Brahma Rasayana	3	5	6	1
22	**8.Anupana Prayoga for Aushadhi Kalpa**	3	5	4	1

	Properties of Anupana **Factors to be considered for selection of Anupana** **•Dosha** **•Aushadha** **•Roga/ Rogi** **•Ahara** **Purpose of Anupana** **Contraindications of Anupana** **Eka Kalpa Vydi anusara aneka Anupana for following yogas** **1.Kaishore Guggulu:** Sarangadhar Samhita , Madhyam khanda- 7/72-81, P: 136**2. Yogaraj, Guggulu:** Sarangadhar Samhita Madhyam khanda- 7/56-69, P:135**3. Narayana Churna**: Sarangadhar Samhita of Pandit Sarangadharacharya, , Madhyam khanda- 7/83-91, P:123-124**4.Rasa Sindoor:** RasaTarangini Hindi commentary of Sri Sadananda Sarma,Chaukhambha Surbharti, Murcchana vigyaniya Taranga, 6/203-234, P: 125-127**5. Rasa Parpati:** Rasa Tarangini of Sri Sadananda Sarma,Chaukhambha Surbharti Prakashan, Murcchana vigyaniya Taranga, 6/144-153, P: 116-117**6.Kankayan Vati** : Sarangadhar Samhita Surbharti Prakashan, Madhyam khanda, 7/50-55, P: 134-135)				
23	**9.Aushadhi Prayoga Marga** **Introduction** **Types in ayurveda** **Advantages and disadvantages of each aushadhi prayoga marga and probable mode of action after administration of following dosage forms in below mentioned routes** 1. Mukha (Oral Cavity): Vati, Gutika, Churna, Asava, Arishta,Kashaya, Avaleha, Khanda, Sneha (Ghrita/Taila), 2. Nasa(Nasal Route)- Dosage form used - Churna, taila, swarasa, arka 3. Karna (Through Ear)- Taila, Ghrita 4. Akshi (Through Eyes)- - Ghrita, Taila, 5. Twak (Through Skin)- Lepa, Alepa, Pralepa, Malahara, upanaha,pradeha, abhyanga, udvartana • Shirodhara - Takra • Abhyanga- Sahacharadi Taila • Ashti Bhagna- Murivenna Taila • Vrana- Jatyadi Taila • Smashru – Shankha Bhasma • Kesha Ghanata- Bringaraja Taila • Akala Palita – Hasthi Danta Masi • Indralupta – Icchabhedi Rasa • Lomashatana – Lomashatana Lepa 6. Guda (Anal Route)- Dosage forms - Vartis, taila, ghrita, kalka, churna, kashaya 7. Mutra marga (Through urethra)- Uttara Basti with	3	10	5	1

	Dosage forms- Taila, ghrita 8. Yoni marga (Through vagina)- Yoni Dharana, Yoni Dhavana, Yoni Pichu, Yoni Dhoopana				
24	**10.Rational prescription along with safe dispensing of Ayurvedic formulations.** Rational prescription along with safe dispensing of Ayurvedic formulations as per NABH guideline	3	5	1	4
25	**11.Traditional & Local health Practices** Introduction to Traditional & Local health Practices and Government initiatives to preserve it. Brief introduction to TKDL	3	5	2	4
26	**12.Pharmacovigilance for Ayurveda drugs** Pharmacovigilance and Adverse Drug Reactions (ADR) Pharmacovigilance Programme of Ayurveda, Siddha, Unani and Homeopathy (ASU & H) Drugs Central Sector Scheme and Centres of Pharmacovigilance of ASU & H Drugs	3	5	1	4
Total Marks			**100**	**75 hr**	**33 hr**

Table 3: Learning objectives (Theory) of Course

Paper 1 Ayurvediya Aushadhi Nirmana Vigyana									
A3 Course outcome	**B3** Learning Objective (At the end of the session, the students should be able to)	**C3** Domain/sub	**D3** Must to know / desirable to know / Nice to know	**E3** Level Does/ Shows how/ Knows how/ Know	**F3** T-L method	**G3** Assessment (Refer abbreviations)	**H3** Formative/ summative	**I3** Term	**J3** Integration
Topic 1 1.Chronological development of Ayurvediya Aushadhi Nirmana (Lecture :2 hours, Non lecture: 1 hours)									
CO1	Explain historical evolution of Ayurvediya aushadhi nirman and Rasashastra.	CK	MK	K	L&GD	TT-Theory	F&S	I	
CO1	Describe about contribution of Nagarjuna Acharya to Rasashastra	CK	MK	K	L_VC	TT-Theory	F&S	I	
CO1	Enlist important classical texts of Rasashastra and describe their unique features in short.	CK	DK	K	L&PPT	TT-Theory	F&S	I	
CO1	Describe structure of Pharmacy and enlist formulations prepared in pharmacy, after visiting the unit of teaching pharmacy of own campus	CC	MK	KH	L&GD	CL-PR	F	I	
CO1	Describe Recent development in Ayurvedic Pharmaceuticals viz, new dosage forms, pharmaceutical modification techniques.	CK	DK	K	L&PPT	TT-Theory	F&S	I	
CO1	Define Rasa and Rasayana and describe difference between Rasa and Rasayana	CK	DK	K	L&PPT	T- MEQs	F	I	

CO1	Justify design of ancient Rasashala	AFT-VAL	NK	KH	SDL	PRN	F	I	
Topic 2 2.Paribhasha (Terminology) (Lecture :8 hours, Non lecture: 4 hours)									
CO1	Explain the term Paribhasha and its importance in Ayurvediya Aushadhi Nirmana.	CK	MK	K	L	T-CRQs	F	I	
CO1	Discribe the terms Aushadha, Bheshaja, Kalpana, Kashaya, Kashaya yoni, Samskara- based on their word derivations	CC	MK	K	L	T- EW	F&S	I	
CO1	Enlist sequentially - names of all drugs classified in the varga(group). Recite shlokas of Maharasa, Uprasa , Sadharana Rasa Varga from Rasaratnasamuchchaya.	CC	MK	K	EDU,SDL,GBL,REC	P-REC,P-ID,PUZ,O-QZ	F&S	I	
CO1	Enlist and discuss Sandigdha, Krutrima, Pratinidhi and Anupalabdha dravya.	CK	DK	K	L&PPT,SDL,GBL	P-ID,CL-PR	F	I	
CO1,CO2	Discribe the definition of the term Shodhana. Explain with examples different techniques used for the procedures of Shodhana.	CAP	MK	KH	L&GD,L_VC,PT	T- MEQs,P-EXAM,O-QZ,O-GAME	F&S	I	
CO1	Explain the term Marana and describe its types with examples	CK	MK	K	L&PPT,LS	T-OBT	F&S	I	
CO1	Enlist all relevent prakriya paribhasha of Amrutikarana, Lohitikarana,Sattvapatana, druti and discuss with examples	CK	DK	K	DIS,LS	PRN	F	I	
CO1,CO2	Recite sequentially names of Parada Ashta samskara. Explain the terms Jarana Murchchhana and cite types with examples. Compare Jarana and Murchchhana.	CC	MK	KH	L_VC,PrBL	T-EMI,T- MEQs,PRN,M-CHT	F&S	I	

CO1	Identify names of Parada Bandhas	CK	NK	K	LS	T-OBT	F	I	
CO1,CO2,CO5	Describe Grahyagrahya parameters used for selection of Rasadravyas.	CK	MK	SH	L&PPT,PrBL	T- EW	F&S	I	
CO1,CO2,CO5,CO6	Illustrate all Bhasma pariksha as per classical description.	CC	MK	KH	L_VC,IBL,DA,D	T- MEQs,P-EXAM,CHK	S	III	
CO1,CO2,CO5	Define the word Siddhilakshani.Recite examples of classical siddhilakshani. Interpret its rationality	CE	MK	KH	L&PPT,SDL,REC,D_L	T- MEQs,P-EXAM	F&S	I	
CO1	Recognise and discuss Dhanvantari Bhaga and Rudra bhaga	CC	NK	K	RLE	C-INT	F	I	
CO1	Explain importance of Mana-paribhasha and classical types of Mana. Recall Charts of Mana .	CK	DK	KH	L&PPT,PSM	T-CRQs,P-SUR	F	I	
CO1,CO2	Categorize parameters of Drug Standardization and develop a checklist for assessment of quality of rasadravyas	CE	DK	KH	BS,IBL,TPW,SDL	CL-PR,WP,CHK	F&S	I	
CO2	Explain Value of selection of genuine raw material	AFT-VAL	MK	KH	DIS	DEB	F	II	
CO2,CO3	Explain importance of ethical practices for drug processing(Shodhan, Marana)	AFT-VAL	MK	K	PrBL	P-POS	F	II	
CO2,CO3	Discuss and justify importance of Bhasma Pariksha	AFT-RES	MK	KH	BS	T- EW	F&S	III	

CO2,CO3	Explain nalue of keen and accurate application of weights and measures in Ayurvediya Aushadhi nirmana	AFT-VAL	DK	K	L&GD	PRN	F	II	
Topic 3 3.Adharbhuta Siddhanta (Application of fundamental principles) (Lecture :4 hours, Non lecture: 2 hours)									
CO1,CO2	Elaborate fundamental principles of Ayurvediya Aushadhi Nirmana alongwith their classical references and discuss their application with classical examples of various kalpas.	CC	MK	KH	L&PPT,BS	T- EW,M-POS	F&S	I	
CO1,CO2	Explain Dravya Samgraha vidhi. Explain types of Bhumi desha and types of drugs to be collected from paricular place & places from where Dravya should not be collected.	CC	MK	KH	L&PPT,DIS,BS	T- EW	F&S	I	H-DG
CO1,CO2	Describe time of Dravya collection and explain rationality behind it.	CC	MK	KH	L&PPT,BS	T- EW	F&S	I	H-DG
CO1,CO2	Enlist parts of Sthavara & Jangama Dravyas used for Ayurvediya Aushadhi nirmana.	CC	MK	KH	L&GD,BS	T- EW	F&S	I	H-DG
CO1,CO2	Define Samskara. Discuss role of Samskara in Ayurvediya Aushadhi Nirmana alongwith various examples.	CC	MK	KH	L&PPT,BS	T- EW	F&S	I	H-Samhita
CO1,CO2	Discribe Ardra - Shushka Dravya & Anukta – Visheshokta Dravya collection principles.	CC	MK	KH	L&PPT,DIS	T- EW	F&S	I	H-DG
CO1,CO2	Describe importance of kalpa sevan matra. Explain factors considered for deciding dosage of any drug (Ayurvedic as well as modern medicine principles). Describe Posology	CC	MK	KH	L&PPT,BS	T- EW	F&S	I	
CO1,CO2	Explain Saveeryata Avadhi(Shelf life) of Ayurvedic dosage forms.	CK	DK	K	L&PPT,DIS	T- MEQs,P-VIVA	F&S	I	
CO1,CO2	Discuss Yogika Dravya Sidhdhanta(Drug combination)	CC	MK	KH	L&PPT,BS	T- EW	F&S	I	
CO1	Explain importance of Kala (Time) Samskara in Ayurvediya	CK	MK	K	L&PP	TT-Theory	F&S	I	

	Aushadhi Nirmana. Elaborate Aushadhi sevana kala mentioned in Sharangdhara samhita. Discribe chrono- Therapeutics.				T				
CO1	Justify Aushadhi kalpa namakarana siddhanta with examples	CC	DK	KH	IBL	CL-PR	F	I	
Topic 4 4.Yantropakaranani- I (Equipments and machineries) (Lecture :6 hours, Non lecture: 4 hours)									
CO1,CO5	Choose and record contemporary machines used in Ayurvedic drug preparation.	CC	DK	K	L&PP T,DIS	T- EW	F&S	I	
CO1,CO5	Discuss the pharmaceutical use of Distillation apparatus, Ball Mill, Pulveriser, End Runner, Edge Runner, Tablet compression machine, Capsule filling machine, Pouch filling machine, Liquid filling machine in Ayurvediya Aushadhi Nirmana	CC	DK	K	L&PP T,DIS	T- EW	F	I	
CO1,CO5	Describe the principles behind construction and working of the classical Yantras used for Ayurvediya Aushadhi nirmana.	CAP	MK	KH	L&PP T,DIS	T- MEQs,P-VIVA	F&S	I	
CO1,CO5	Enlist categorical information about the following Yantras in the charts- Ulukhal Yantra, Patan Yantra, Jarana Yantra, Patala Yantra and Swedana Yantra.	CK	DK	K	L&PP T,DIS	T- EW	F	I	

CO1,CO5	Interpret the mechanism and effect of Yantras / machines on the Physical and Chemical properties of the drug material.	CC	DK	KH	DIS,IBL	M-POS	F	I	
CO1	Enlist Ayurvediya aushadhi kalpana and equipments/yantras/ machines used for preparation of each kalpana.	CK	DK	K	L&PPT	T- EW	F	I	
Topic 5 5.Yantropakaranani -II (Equipments, fuel and Heating Devices) (Lecture :5 hours, Non lecture: 4 hours)									
CO1,CO5	Describe the term Yantra and enlist yantras described in classics useful for aushadhi nirmana. -	CK	DK	K	L&PPT	TT-Theory	F	I	
CO1,CO5	Define the term Puta and recite its classical explanation.	CK	MK	K	L_VC,RLE	T- EW,M-POS	F&S	I	
CO1,CO5	Produce categorical information(Size of Pit, Number of cowdunkcakes, use etc.) about following Putas viz. Mahaputa, Gajaputa, Varahputa, Kukkutaputa, Kapotputa, Lavakputa, Kumbhaputa, Bhandaputa, Valukaputa and Bhudharputa.	CK	MK	K	L&PPT,DIS,TPW	T- EW,M-POS,COM	F&S	I	
CO1,CO5	Recognise the principles behind construction and working of the classical Putas.	CC	MK	KH	L&PPT,DIS,IBL	T- EW,M-POS	F&S	I	
CO1,CO5	Identify and enlist contemporary devices used in the preparation	CC	DK	K	L&PP	T- MEQs,QZ	F&S	I	

	of Bhasma.				T,DIS ,IBL	,M-POS			
CO1,CO5	Review the temperature pattern of various Putas by referring research articles.	CC	DK	K	TPW, SDL	QZ ,M-POS	F&S	I	
CO1,CO5	Compile names and significance of temperature measuring devices with reference to Puta.	CK	DK	K	DIS, ML	CL-PR,M-POS	F	I	
CO1,CO5	Enlist the specific Puta used for a particular Bhasma Nirmana.	CC	DK	KH	L&PPT	CL-PR,M-POS	F	I	
CO1,CO5	Enlist various devices used for heating during Ayurvediya Aushadhi nirmana.	CK	DK	K	L,DIS ,RLE, FV	T- EW,P-SUR	F&S	I	
CO1,CO5	Enlist constituents needed for Samanya Musha Nirmana.	CK	DK	K	L&PPT,IBL	T- MEQs	F&S	I	
CO1,CO5	Define the term Musha and describe uses of various types of Musha.	CK	DK	D	L_VC ,D-M	T-OBT	F&S	I	
CO1,CO5	Enlist and discuss the material used for Sandhi Bandhan (while using Sharava and Kachakupi)	CK	NK	K	DIS,RLE	T-OBT	F	I	
CO1,CO5	Identify and record the types of Crucibles .	CK	NK	K	L&PPT	M-POS	F	I	

CO1,CO5	Interpret the effect of heat transformation in the material subjected to heating through Musha.	CAP	DK	KH	L&PPT,DIS,D-M	PRN,CL-PR	F	I	
CO1,CO5	Recall Pakaj Utpatti Siddhant and interpret it for Agni Sannikarsha Sanskara.	CC	DK	KH	L&PPT,DIS	T- EW,CR-RED	F&S	I	
CO1,CO5	Explain the Pharmaceutical use of the Hot plate, heating mantle, induction stove, hot air oven, muffle furnace (horizontal and vertical type)	CC	NK	KH	DIS,SDL	P-SUR,M-POS	F	I	
CO1	Describe types of Koshthi and their uses	CK	DK	K	L	COM	F	I	
CO1,CO5	Describe the Current trends in heat transfer device e.g. steam jacketed heating device, programmed muffle furnace, programmed furnace for Parpati / Pottali preparation.	CC	DK	K	L&PPT,IBL,SDL	M-POS,COM	F	I	
CO1,CO5	Assess and interpret the effect of fuel in quantum of heat given (time and temperature)	CC	DK	KH	DIS,PrBL	M-POS,CR-RED	F	I	
CO1,CO5	Enlist various fuels used for heating for estimation of their heat value.	CK	NK	K	IBL,SDL	M-POS	F	I	
CO2,CO3	Analyse and appraise use of proper heating device and fuels used for Ayurvediya Aushadhi Nirmana.	AFT-SET	DK	KH	BS	DEB	F	II	
Topic 6 6.Kalpana Nirmana I (Primary & Secondary dosage forms) (Lecture :6 hours, Non lecture: 4 hours)									
CO1,CO2	1. Explain Kashaya kalpana 2. Enlist the dosage form come under Panchavidha Kashaya	CC	MK	KH	L	T- EW,P-VIVA	F&S	II	

	Kalpana and their Upakalpana 3. Justify Primary , secondary and tertiary dosage form under Panchavidha kashaya Kalpana and their Upakalpana								
CO1	Define with synonyms and classify different varieties of the dosage form in Ayurvediya Aushadhi nirmana	CK	MK	K	L	T- EW,P-VIVA	F&S	II	
CO1	Describe methods of preparation of the dosage form along with the principles of extraction, concentration and dilution etc.	CC	MK	KH	L&PPT	T- EW,P-VIVA	F&S	II	
CO1,CO2	Explain in details about Standard Operating Procedure (SOP) of each kalpana.	CC	MK	KH	L&PPT,DIS	T- EW,P-VIVA	F&S	II	
CO1,CO3	Enlist details of the applications/administration (samanya Matra, Anupana or sahapana, indications and contraindications) of the dosage form with various examples	CC	MK	K	L&PPT	T- EW,P-VIVA	F&S	II	
CO1,CO6	Assess and discuss modern day development and market trend of the dosage form	CC	DK	K	L&GD,IBL,LS	T- MEQs,P-SUR	F&S	II	
CO1	Determine the advantages and disadvantages of the dosage form	CC	DK	K	L	T- EW,P-VIVA	F&S	II	
CO2	Describe method of preparation of dosage form along with the principle involved	CK	MK	K	L&PPT,DIS	T- EW,P-VIVA	F&S	II	
CO1	Describe meaning of the term Upakalpana. Enlist panchavidha kashaya kalpana and their respective Upakalpana	CK	DK	K	L	T- MEQs,P-VIVA	F&S	II	
CO1	Explain various kalpas belonging to Various dosage forms	CK	MK	K	L_VC	P-EXAM	S	II	

	-Ingredients, proportion, matra, sevan vidhi if any, therapeutic uses				,PT				
CO2	Critically evaluate rationality behind different proportion of water used in various formulations	AFT-VAL	DK	KH	BS	P-VIVA	F&S	III	
Topic 7 7.Kalpana Nirmana-II (Method of Preparation of different dosage forms& Dietary Supplements)) (Lecture :5 hours, Non lecture: 4 hours)									
CO1,CO5	Explain the basic principles involved , processing techniques,quality control parameters used/ involved in the preparation of Avaleha, Kalpana with examples ,instruments used in small and Large scale production,Research updates	CAP	MK	K	L&PPT,TPW,BL	T- EW,T-OBT	F&S	II	
CO1,CO5	Explain the basic principles involved , processing techniques,quality control parameters used/ involved in the preparation of Sneha Kalpana, Kalpana with examples ,instruments used in small and Large scale production,Concept of Avartana, Research updates on Snehakalpana, Market survey	CK	MK	K	L_VC,TUT	T- EW,P-VIVA	F&S	II	
CO1,CO4	Describe the Significance of sandhana kalpana, classification, Difference between Madya and Shukta Kalpana, general method of preparation, essential ingredients, Anukta Mana, Sandhana Vidhi, observations, Burnig candle test, Lime water Test, difference between Asava and Arishta, essential knowlege of sale and clinical practice , Research updates	CAP	MK	K	L_VC,PrBL	T- EW,T-OBT	F&S	II	
CO1,CO3,CO5	Explain Definition , significance of Pathya, types, general, method of preparation Manda, Peya, Yavagu, Vilepi, Anna or Odana Kalpana, Krushara, Yusha, Takra, Khada, Kambalika, Raga, Shadava, Related Research updates, Market survey of Dietary Supplements and Nutraceuticals	CAP	MK	KH	L_VC,RLE	T- EW,P-VIVA,P-EXAM	F&S	II	
Topic 8 8.Rasa Dravya Parichaya- I (Lecture :12 hours, Non lecture: 4 hours)									
CO1		CC	MK	K	L&PP	T- MEQs,P-	S	I	

	Enlist synonyms of Rasadravya and explain significance of that				T,D_L	VIVA			
CO1,CO2,CO6	Explain classical & Mineralogical identification and Sources of Rasadravyas	CC	MK	SH	L&PPT,PT	T- EW,P-EXAM	F&S	I	
CO1,CO2	Discriminate types, Grahya-Agrahyata and Dosha of Rasadravya	CC	MK	KH	L&PPT,PT	P-VIVA,TT-Theory	F&S	I	
CO1,CO2	Explain Shodhan and Marana and other processing techniques of the Rasa- Dravya.	CC	MK	KH	L_VC,IBL,D	T- EW,P-VIVA,INT	F&S	I	
CO1,CO2,CO6	Discuss probable physical, chemical changes occuring during process & after Shodhana and Marana of Parada, Haratala, Tamra and Shankha.	CC	MK	KH	L&PPT,BS,SDL	T- EW,P-VIVA,P-EXAM	F&S	I	
CO6		CC	DK	KH	DIS,B	P-VIVA	F&S	I	

	Explain research updates about Shilajatu,Naga,Mukta and Kapardika.?				S				
CO1,CO2,CO6	Discuss probable physical, chemical changes occuring after Bhavana, Puta & whole process of Bhasma nirmana from Rasadravyas	CC	MK	KH	DIS,BS	T-OBT	F&S	I	
CO1,CO4	Enlist Kalpas prepared from these Rasdravyas and therapeutic imortance of that Rasadravya	CK	DK	K	IBL,SDL	PRN	F	II	
CO2,CO3	Develop checklist for identification of genuine rasadravyas	AFT-CHR	MK	K	IBL	P-PS	F&S	III	
Topic 9 9.Rasa Dravya Parichaya II (Lecture :7 hours, Non lecture: 6 hours)									
CO1	Enlist the important synonyms of Rasadravyas	CC	DK	KH	L&PPT,DIS	P-VIVA	F&S	II	
CO1,CO6	Explain classical & Minerological identification and their Sources.	CK	DK	K	L&PPT,D_L	P-VIVA	F&S	II	

CO1	Elaborate types, Grahya-Agrahyata and Dosha of Rasadravyas	CK	DK	K	L&PPT	P-VIVA	F	II	
CO1,CO2	Explain Shodhana, Marana & and other processing techniques with probable chemical reactions.	CC	MK	KH	L&PPT,DIS,LS	T- EW,P-VIVA	F&S	II	
CO1,CO2	Explain Shodhana, Marana & and other processing techniques with probable chemical reactions.	CE	DK	K	L&GD,PT	P-VIVA	F&S	I	
CO6	Explain research updates of Kasisa,Gauripashana and Akika.	CC	DK	KH	DIS, ML	PRN	F	I	
CO1,CO5	Enlist names of rasadravyas and important kalpas prepared from respective dravya. Describe therapeutic importance of that Rasadravya.	CK	DK	K	DIS,SDL	CL-PR,M-CHT	F	II	
Topic 10 10.Rasadravya Parichaya III (Lecture :3 hours, Non lecture: 6 hours)									
CO1	Enlist Synonyms and sources.	CK	NK	K	PrBL, TPW, PER	T-OBT,M-CHT	F&S	II	

CO1,CO6	Determine types, Grahya-Agrahya, properties & classical as well as Mineralogical Identification of Rasadravyas	CC	NK	K	L&PPT,DIS,SDL	P-VIVA,CHK	F&S	II	
CO1,CO2	Explain Shodhana, Marana and Probable Chemical Changes.	CC	DK	K	L&PPT,IBL	PRN	F&S	II	
CO6	Explain research update of Badarashma.	CK	NK	K	DIS,LS	P-VIVA	F	II	
CO1,CO5	Enlist Rasadravyas from this group and describe important kalpas with their therapeutic utility	CK	DK	K	TPW	PRN	F	II	
Topic 11 11.Kalpana Nirman -III (Method of Preparation of different dosage forms) (Lecture :8 hours, Non lecture: 6 hours)									
CO1,CO2,CO3	Describe sharkara kalpana along with preparation method of Syrup.Explain therapeutic importance of prepared sharkara kalpana along with its shelf life.	CC	NK	K	L&PPT,SDL	P-VIVA	F&S	II	
CO1,CO2,CO3	Describe Gudapaka preparation method with its confirmatory tests and precautionsExplain therapeutic importance of prepared Gudapaka along with its shelf life.	CC	NK	K	L&PPT	P-VIVA	F&S	II	
CO1,CO2,CO3	Describe Lavana kalpana preparation method with its confirmatory tests and precautionsExplain therapeutic	CC	DK	K	L&PPT	T-CRQs,P-VIVA	F&S	II	

	importance of prepared Lavana kalpana along with its shelf life and packaging techniques.								
CO1,CO2,CO3	Describe Kshara kalpana preparation method with its confirmatory tests and precautionsExplain therapeutic importance of prepared Kshara kalpana and Ksharasutra integration with Shalya tantra department along with its shelf life and packaging techniques.	CAP	MK	KH	L&PPT	P-VIVA,TT-Theory	F&S	II	V-SHL
CO1,CO2,CO3	Describe Ayaskriti kalpana preparation method with its confirmatory tests and precautionsExplain therapeutic importance of prepared Ayaskriti kalpana along with its shelf life and packaging techniques.	CC	NK	KH	L&PPT	P-VIVA	S	II	
CO1,CO2,CO3	Describe Lepa kalpana preparation method with its confirmatory tests and precautionsExplain therapeutic importance of prepared Lepa kalpana, integration with Kayachikitsa and Panchakarma department along with its shelf life and packaging techniques.	CC	MK	K	L&PPT	T- EW,P-VIVA	F&S	II	V-KC ,V-PC
Topic 12 12.Chaturvidha Rasayana (Lecture :4 hours, Non lecture: 4 hours)									
CO1,CO2	Describe importance and unoque features of Chaturvidha Rasayana - Kharaliya Rasayana, Parpati Rasayana, Kupipakwa Rasayana & Pottali Rasayana.	CC	MK	KH	L&PPT,IBL	T- EW,P-VIVA	F&S	II	
CO1,CO2	Explain definition, types and method of preparation of Chaturvidha Rasayana.	CAP	MK	D	L&PPT,PT	T- EW	F&S	II	

CO1,CO2	Determine role of Yantra, Agni & Kala for pharmaceutical process of chaturvidha rasayana	CAN	DK	KH	PT	T- EW,P-VIVA	F&S	II	
CO6	Explain shelf-life of Chaturvidha Rasayana.	CAN	DK	SH	L,DIS	P-VIVA	F&S	II	
CO5	Describe chemical changes occuring during the preparation of chaturvidha rasayana and its impact on Pharmacological action of Chaturvidha Rasayana	CAN	DK	KH	L&GD,BS,SDL	CR-RED,CR-W	F	II	
CO5	Explain law of Definite proportion and proportion of Mercury and sulphur needed for preparation of sulphide of Mercury. in Chaturvidha rasayana	CAP	DK	KH	BS,IBL	CL-PR	F	II	
Topic 13 13.Current and emerging trend in Ayurvedic pharmaceuticals (Lecture :3 hours, Non lecture: 4 hours)									
CO1,CO5,CO6	**Discuss the classfication of different dosage forms.**	CK	DK	K	L&PPT,DIS	P-VIVA,M-POS	F&S	III	
CO1,CO5,CO6	Explain the need of different dosage forms.	CK	DK	K	L&PPT,DIS,SDL	P-VIVA,M-POS	F&S	III	
CO1,CO5,CO	Enlist categorical information about the cosmetics used in daily	CK	DK	K	L_VC	PRN,M-POS	F	III	

6	routine. Appreciate Ayurvedic cosmetic products.				,DIS, FV				
CO1,CO5	Appreciate Ayurvedic cosmetic products.	AFT-VAL	DK	KH	BS,Pr BL	PRN,P-SUR	F	III	
CO1,CO5,CO 6	Choose and record the contemporary machineries used in the manufacture of cosmetics.	CK	NK	K	L_VC ,DIS, SDL	M-POS	F	III	
CO1,CO5,CO 6	Enlist Quality Control parameters of cosmetics preparations.	CK	DK	K	L&PP T,DIS	P-VIVA,M-POS	F&S	III	
Topic 14 14.GMP(Schedule T) & Regulatory aspects of Ayurvedic drugs (Lecture :2 hours, Non lecture: 4 hours)									
CO5	Explain the legal and regulatory aspects of manufacturing, and sale of Ayurvedic drugs.	CC	MK	K	L&PP T,IBL	CL-PR	F&S	III	
CO5	Describe acts and rules mentioned in Drug & Cosmetic Act 1940 & Rule 1945 and their relevance to Ayurvedic, Siddha, Unani (ASU) drugs.	CC	MK	K	L&G D,BS	QZ	F&S	III	H-DG
CO5	Discuss the guidelines of Food Safety and Standards Authority of India (FSSAI) and FDA.	CK	DK	K	L&G D,SD L	CL-PR	F	III	
CO3,CO5	Determine the principles and practice of establishment of Ayurvedic pharmacy.	CK	DK	K	L&G D,TP W	P-EN,CL-PR	F	III	
CO5	Discuss the NABL guidelines for testing laboratory (Chemical).	CK	NK	K	L&PP T,D_	CL-PR,CHK	F&S	III	

					L				
CO1,CO5	Explain long forms of these - (FSSAI) and (FDA),(CCRAS),(DCGI), (CDSCO)	CK	DK	K	L	T-EMI	S	III	
CO4	Discuss ethical aspect of large scale drug preparation in Ayurvedic Pharmacies	AFT-VAL	DK	K	DIS	CL-PR	F	III	

Paper 2 Ayurvediya Aushadhi Prayoga Vigyana									
A3 Course outcome	**B3** Learning Objective (At the end of the session, the students should be able to)	**C3** Domain/sub	**D3** Must to know / desirable to know / Nice to know	**E3** Level Does/ Shows how/ Knows how/ Know	**F3** T-L method	**G3** Assessment	**H3** Formative/ summative	**I3** Term	**J3** Integration
Topic 1 1.Aushadhi Prayoga Vigyana (Lecture :1 hours, Non lecture: 2 hours)									
CO1	Define Aushadhi Prayoga Vigyana and its scope and enlist prashasta bheshaja laxana	CK	MK	K	L	TT-Theory	F&S	I	
Topic 2 2.Single drug (Herbal & Mineral) (Lecture :8 hours, Non lecture: 2 hours)									
CO1,CO2,CO4,CO5,CO6	Describe different dosage forms prepared out of a single herb or mineral	CK	MK	KH	L_VC	P-VIVA,COM,TT-Theory	F&S	I	
CO1,CO2,CO4,CO5,CO6	Appreciate how the therapeutic efficacy varies depending on the dosage form	AFT-VAL	MK	K	L&PPT	T- EW,DEB	F&S	I	

CO1,CO2,CO 4,CO5,CO6	Describe therapeutic efficacy of different formulations of Vishadrvya (Bhallataka), with its toxic effects and remedy.	CK	NK	K	L&G D	P-VIVA	F	I	
CO1,CO5	Describe therapeutic efficacy of different formulations of Guduchi, Gairika, Gandhaka	CC	MK	K	L&G D,PE R	P-VIVA,TT-Theory	F&S	III	
CO3,CO4	Aappraise multiple factors considered for preparation of various dosage forms from a single drug and creat list of more such examples.	AFT-CHR	DK	KH	BS,IB L	COM	F	III	
Topic 3 3.Single drug(Bhasma, Shuddha & Pishti) (Lecture :12 hours, Non lecture: 6 hours)									
CO2,CO6	Explain chemical form/composition, Pharmacodynamics and pharmacokinetics of Abhraka, Loha and Godanti Bhasma.	CC	DK	KH	L&PP T,DIS ,IBL	P-VIVA	S	III	
CO1,CO2	Explain therapeutic properties, dosage, Anupana, Pathyapathya, duration of treatment, Sevana Kala, shelf life, important Yogas of each Bhasma.	CC	MK	KH	L&PP T,TP W	T- EW,P-VIVA	F&S	III	
CO1,CO2	Describe Apakwa Ashuddha Avidhi Bhasma Sevanajanya Vyadhi and their Shanti-upaya.	CK	DK	KH	DIS,B S	P-VIVA,TT-Theory	F	III	
CO1,CO2	Describe in detail Amayika Prayoga (Therapeutic uses) of each Bhasma/Pishti with given references.	CAP	MK	SH	L&G D,W	T- EW,P-VIVA	F&S	III	

CO2,CO6	Explain research updates and clinical evidences of Swarna Bhasma, Makshika Bhasma and Shankha Bhasma.	CE	DK	K	PrBL, SDL	PRN	F&S	III	
Topic 4 4.Aushadhi Kalpa -I (Compound formulations) (Lecture :16 hours, Non lecture: 4 hours)									
CO1,CO2	Describe reference, ingredients, therapeutic properties, dosage and all administration details alongwith Anupana of each formulation.	CK	MK	KH	L&PPT,BS, SDL	T- EW,P-VIVA	F&S	III	
CO1,CO2	Explain Pathya Apathya, Sevana Avadhi (duration of treatment) and shelf-life of each formulation.	CC	MK	KH	L&PPT,DIS,BS	T- EW	F&S	III	
CO1,CO2	Interpret probable mode of action of each formulation as per Ayurveda.	CC	DK	KH	L&GD,BS	T- EW,P-VIVA	F&S	III	
CO2,CO3,CO6	Explain research updates and clinical evidences of Arogyavardhini Gutika and Gandhaka Rasayana	CE	DK	K	PrBL	P-VIVA	F&S	III	

CO3,CO4	Critically analyse compound drugs for their therapeutic actions mentiond in the classics.	AFT-VAL	DK	KH	IBL	PRN	F	III	
Topic 5 5.Aushadhi Kalpa-II (Compound Drugs/Formulations) (Lecture :14 hours, Non lecture: 2 hours)									
CO1,CO2,CO3,CO4	Describe Ingredients, therapeutic importance, dose, anupana, pathya-pathya, duration of treatment, sevana kala, shelf life, research updates and clinical evidences of Dashamoola Kwatha, Pushyanuga Churna, Sanjivani Vati, Chitrakadi Gutika, Simhanada Guggulu, Yogaraja Guggulu, Chyavanaprashavaleha, Gandhakadya Malahara, Ashokarishta, Kutajarishta, Panchagavya Ghrita, Bilvadi Gutika.	CAP	MK	KH	L&PPT	T- EW,P-VIVA	F&S	III	
CO1,CO2,CO3,CO4	Describe Ingredients, indications, dose, anupana, pathyapathya, duration of treatment, sevana kala, shelf life, and clinical evidences of Mahamanjistadi kwatha, Sudarshana Churna, Vyoshadi Vati, Bala Chaturbhadra Rasa, Lavana Bhaskara Churna, Narayana Taila,, Neeliringadi Taila Aravindasava, Kumaryasava.	CAP	NK	KH	L&PPT,DIS	P-VIVA	S	III	
CO1,CO2,CO4,CO5	Describe Ingredients, indications, dose, anupana, pathyapathya, duration of treatment, sevana kala, shelf life, and clinical evidences of Panchaguna Taila, Dadimavaleha, Bramhi Ghrita	CK	DK	K	L&PPT	P-VIVA,TT-Theory	S	III	
CO1,CO2,CO3	Undersand & Recite following classical kalpas.Describe Amayika prayoga of each formulation.Understand probable mode of action as per AyurvedaSearch and Record relevant reaserch articles.Create charts describing details of these drugs.Review market avaibality & poplularities of these drugs among practicing vaidyas & near by population.	CAP	MK	KH	L&PPT,DIS,BS,IBL,PBL	P-EXAM,COM,TT-Theory	F&S	III	V-KC,V-SH,V-PC,V-SHL,V-SP,V-BL

CO3,CO4	Explain ethical aspect of administration of compound drugs mainly regarding duration of the treatment given.	AFT-VAL	DK	K	PBL	CL-PR	F	III	
CO1,CO2,CO4,CO6	Describe ingredients, with its dose, therapeutic importance, anupana and pathya-apathya along with its clinical evidences and Research upadates	CK	MK	KH	L&PPT	T- EW,P-VIVA	F&S	III	
CO1,CO2,CO4,CO6	Enlist the formulations with its dose, anupana and indications	CK	NK	K	L	T-EMI	S	III	
Topic 6 6.Dosage Forms & Cosmetic Products (Lecture :5 hours, Non lecture: 2 hours)									
CO2,CO3,CO7	Define the term- Dosage forms.	CK	MK	K	L&PPT	TT-Theory	F&S	III	
CO2,CO3,CO7	Discuss the need of different dosage forms.	CK	MK	K	L&PPT	TT-Theory	F&S	III	
CO2,CO3,CO7	Explain the classification of different dosage forms.	CK	DK	K	L&PPT	TT-Theory	F&S	III	
CO2,CO3,CO7	Enlist the solid / liquid / semisolid dosage forms.	CK	MK	K	L&PPT	T-EMI	F&S	III	
CO2,CO3,CO7	Discuss the routes of administration of different dosage forms.	CK	MK	K	L&PPT	T- EW	F&S	III	
CO2,CO3,CO7	Describe the advantages and disadvantages of currently available dosage forms.	CK	MK	K	L&PPT	TT-Theory	F&S	III	
CO2,CO3,CO7	Discuss the research updates about modification of classical Ayurvedic dosage forms.	CK	DK	K	L&PPT	CL-PR	F	III	
CO2,CO3,CO7	Discuss the relevant case studies of different dosage forms.	CK	NK	K	L&PPT	P-SUR	F	III	

CO2,CO3,CO7	Define the term Cosmetics.	CK	DK	K	L	TT-Theory	F&S	III	
CO2,CO3,CO7	Explain the classification of cosmetics based on their application on the specific body parts.	CK	DK	K	L&PPT	CL-PR	F&S	III	
CO2,CO3,CO7	Differentiate between the ancient cosmetics and modern day cosmetics.	CK	DK	K	L&PPT	TT-Theory	F&S	II	
CO5	compare and appraise herbal cosmetics vs synthetic products	AFT-VAL	DK	KH	PBL	PRN	F	III	
Topic 7 7.Nutraceuticals (Lecture :6 hours, Non lecture: 1 hours)									
CO1	Describe importance of combination of aahara and aushadha	CK	MK	K	L&PPT	T- EW	F&S	III	H-SW
CO2,CO6	Explain Nutraceuticals with its types	CK	MK	K	L&PPT	TT-Theory	F&S	III	H-SW
CO2,CO6	Corelate rasayana and nutrceutical with examples	CAN	DK	KH	DIS,PrBL	T-OBT	F	III	H-SW
CO2	Describe with examples mode of action of Ayurvedic nutraceuticals	CAP	MK	KH	SDL, LS	PRN	F	III	H-Samhita, H-SW
CO2,CO6,CO7	Enlist at least two dietery preparations from Ayurvedic classics which can serve as rasayana/ nutraceutical in-1) General Health2) Pediatric Health3) Geriatric Health4) Women(Garbhini/ Sutika) Health5) Cardio-protection6) Chronic illness-recovery stage	CAP	MK	K	DIS,BS,SY	CL-PR	F	III	H-SW
CO1,CO2,CO6,CO7	Describe potential of Ayurvedic diet and Rasayana in sports endeavor	CAP	DK	KH	BS,PrBL,PS	DEB	F	III	H-SW

					M				
CO7	Explain research updates about nutraceuticals	CK	NK	K	SDL, PL	M-POS	F	III	
CO2	Enlist atleast two examples of Aushadhi siddha aahara with its indications for each category-->(Aharadravya belonging to following category and kalpa prepared from that aahara dravya and other aushadhi ingredients)1) Jala varga2) Dugdha varga3) Ikshu varga4) Suka-dhanya varga5) Shimbi Dhanya Varga6) Shaka Varga7) Phala Varga8) Lavana Varga9) Spices	CC	DK	K	L&GD,PrBL	CL-PR	F	III	H-Samhita, H-SW
CO3,CO4	creat list of unique features of Ayurvedic neutraceuticals and appraise their current need	AFT-VAL	DK	KH	DIS	PRN	F	III	
Topic 8 8.Anupana Prayoga for Aushadhi Kalpa (Lecture :4 hours, Non lecture: 1 hours)									
CO1	Define and classify Anupana and Sahapana	CK	MK	K	L	T- EW	F&S	III	
CO1,CO2	Expalin different factors to be considered for selection of Anupana as per Disease and Patients	CC	MK	KH	L	T- EW	F&S	III	
CO1,CO2	Enlist different anupana for a single drug based on the condtion of patient and disease. Elaborate with the help of examples of kalpas.	CC	MK	KH	L	T- EW	S	III	
CO4	Describe value of proper selection of Anupanas with examples	AFT-VAL	DK	K	SDL	M-CHT	F	III	
Topic 9 9.Aushadhi Prayoga Marga (Lecture :5 hours, Non lecture: 1 hours)									
CO2,CO4	Discuss the various types of Aushadhi Prayog Marga (route of drug administration).	CK	MK	K	L&PPT	T- EW	F&S	II	
CO2,CO4	Describe the advantages and disadvantages of each Aushadhi Prayog Marga.	CK	DK	K	L&PPT,BS	P-SUR,PM,TT-Theory	F&S	II	

CO2,CO4	Enlist the dosage forms used in the specific Aushadhi Prayog Marga.	CK	DK	K	L&PPT	T-EMI	F&S	II	
CO2	Discuss the nature of drug (s) administered in various routes of drug administration.	CAP	NK	KH	L&GD	CL-PR	F	II	
CO4,CO5	Appraise administration of drugs through various routes mentioned in Ayurvedic treatment	AFT-VAL	MK	K	L&GD	T- EW	F&S	III	
Topic 10 10.Rational prescription along with safe dispensing of Ayurvedic formulations. (Lecture :1 hours, Non lecture: 4 hours)									
CO2,CO4	Describe and write demo ideal prescription.	CAP	MK	SH	L&GD,CBL	CR-W,CHK	F&S	III	V-KC,V-SP,V-BL
CO1,CO3,CO4	Explain the safe dispensing and efficacious use of Ayurvedic drugs.	CAP	MK	KH	L&GD,BS,TPW	T-CS,PM	F&S	III	V-KC,V-BL
CO2,CO4	Explain the importance of rational prescribing of drugs and the concept of essential drugs.	CK	DK	K	L&GD,IBL	QZ ,CHK	F	III	V-KC
CO2,CO4,CO5	Describe the standard protocol for safe dispensing of Ayurvedic drugs.	CK	DK	KH	L&GD	T-OBT	F	III	
CO2,CO4	Demonstrate and educate home remedies to small group of population.	CAP	DK	SH	PrBL,TPW	TR	F	III	H-SW
CO5	explain ethical aspects related to prescription writting	AFT-RES	MK	KH	TPW	INT	F	III	
Topic 11 11.Traditional & Local health Practices (Lecture :2 hours, Non lecture: 4 hours)									
CO1	Identify Local Health Traditions and Healing Knowledge,	CC	DK	K	DIS,PrBL	P-SUR,INT	F	III	

CO1,CO5	Recognise the possible potential of product development and research based on Traditional knowledge	CK	DK	KH	IBL	INT	F	III	
CO1,CO4	Identify the factors responsible for grant of patent and erroneus grant of patent on indian traditional knowledge.?	CK	DK	K	BS	INT	F&S	III	
CO5	Appraise traditional knowlege of Ayurvedic medicines	AFT-VAL	DK	K	TPW	CR-W	F	III	
Topic 12 12.Pharmacovigilance for Ayurveda drugs (Lecture :1 hours, Non lecture: 4 hours)									
CO2,CO4,CO5	Describe the term Pharmacovigilance and explain importance of Pharmacovigilance for Ayurvedic drugs.	CK	DK	K	L&PPT,IBL	M-POS,C-INT,RK	F	III	V-KC,V-BL,H-DG,H-AT
CO4,CO5	Explain the status and central sector scheme of Pharmacovigilance for Ayurveda, Siddha, Unani, and Homeopathy (ASU & H) drugs.	CK	MK	K	L&PPT,DIS	INT,TT-Theory	F	III	V-KC,H-DG,H-AT
CO4,CO5	Define Adverse Drug Reactions (ADR) and its types.	CE	DK	K	L&GD,IBL	QZ ,TT-Theory,VV-Viva	S	III	V-KC,V-BL,H-DG,H-AT
CO2,CO4,CO5	Identify and monitor ADRs.	AFT-VAL	DK	KH	L&GD,BS,IBL	PRN,RK	F	III	V-KC,V-BL,H-DG,H-AT

CO2,CO4	Discuss and make critical comments on the safe and efficacious use of Ayurvedic drugs.	CAP	DK	KH	L&GD,PrBL,TUT	QZ ,CL-PR,INT	F	III	V-KC ,H-DG,H-AT
CO4,CO5	Debate on ADR of ASU drugs	AFT-RES	DK	K	DIS	DEB	F	III	

List of Practicals (Term and Hours)

PRACTICALS (Marks-100)			
S.No	**List of Topics**	**Term**	**Hours**
1	1.Paribhasha concept based Practicals	1	20
2	2.Panchavidha Kashaya Kalpana & their Upakalpana Practicals	1	24
3	3.Rasa Dravya Aushadhi Nirmana Practicals	1	20
4	4.Bheshaja Kalpana Practicals -I	2	24
5	5.Bheshaja Kalpana Practicals -II	2	22
6	6.Dosage Forms & Self-care Products Practicals	2	22
7	7.Field Visit/ Study Tour	3	24
8	8.Hospital IPD Practical	3	10
9	9. Drug Dispensing Practical	3	6
10	10.Quality Control Practicals	2	38

Table 4: Learning objectives (Practical)

A4 Course outcome	B4 Learning Objective (At the end of the session, the students should be able to)	C4 Domain/sub	D4 Must to know / desirable to know / Nice to know	E4 Level Does/ Shows how/ Knows how/ Know	F4 T-L method	G4 Assessment (Refer abbreviations)	H4 Formative/ summative	I4 Term	K4 Integration
Topic 1 1.Paribhasha concept based Practicals									
CO1	Identify the drugs and recite classical name,English name and chemical composition and varga(class) Recite Maharasa , uparasa, Sadharana rasa shlokas from Rasaratna samuchchaya.	PSY-SET	MK	KH	GBL, REC	P-VIVA,P-ID	F&S	I	
CO1,CO2	Demonstrate the correct procedure / SOP and assess the changes observed after the procedure.Discuss the relevant samskara and its role in that procedure.Interpret the Physical, Chemical and Biological alterations.	PSY-MEC	MK	D	GBL, PT	P-PRF,CHK,OSPE	S	I	
CO1,CO2	Observe and describe the pharmaceutical preparation of Gandhaka druti. Explain the term alotropism.Recite melting, boiling and evaporating temparature of Gandhaka.	PSY-MEC	DK	KH	DIS,D_L	P-VIVA	S	II	
CO1,CO2	Observe the procedure of Vanga Jarana. Explain the difference between Jarana and Jaranaa. Discuss chemical process of oxidation and reduction. Recall the information about melting points of all the metals.	CAP	DK	KH	PT,D	P-VIVA	S	III	
CO1,CO2	Demonstrate preparation of Kajjali. Recite its classical shloka. Prepare a checklist of parameters for its siddhilakshana. Interpret	PSY-MEC	MK	D	PBL, TPW,	P-REC,P-EXAM,P-PS	F&S	I	

	law of definite proportion to explain and calculate amount of free sulfur in the prepared amount of kajjali. Calculate the expected weight of rasasindura from the given amount of kajjali.				D_L				
CO1,CO2	Identify relevent Bhasmapariksha and demostrate samanya and vishesha Bhasma pariksha. Interpret physical/ chemical laws relevant to classical bhasma pariksha.	PSY-MEC	MK	D	DIS,GBL,LRI,DA,D_L	P-VIVA,CHK	F&S	I	
CO1	Identify various weights and recite essential measures from conversion chart of AFI. Recognise weighing machines and their weighing capacity.	CAP	DK	KH	BS,PrBL,TPW,PL	PRN,P-SUR	F	I	
CO3,CO4	Identify and value SOP of each procedure of the practical conduceted.	AFT-VAL	MK	KH	D_L	P-EXAM	S	II	
CO2	Appraise ancient indications mentioned in classics for confirmation of end point of the pharmaceutical process(Siddhi lakshana)	AFT-RES	MK	K	PrBL	P-VIVA	S	III	
Topic 2 2.Panchavidha Kashaya Kalpana & their Upakalpana Practicals									
CO1,CO2	Recall, Identify and authenticate the raw materials required as per the dosge form/ formulations	PSY-SET	MK	KH	DIS,D	P-VIVA	F&S	II	
CO1,CO2	Demonstrate the method of preparation to get the desired dosage form following SOP	PSY-MEC	MK	SH	DIS,PT	P-VIVA,P-EXAM	F&S	II	
CO1,CO2,CO5	Assess and explain different parameters to achieve desired characters/ end points (siddhi lakshana) as per classical and contemporary parameters	PSY-MEC	MK	KH	DIS,D	P-VIVA,P-EXAM	F&S	II	
CO1,CO2	Describe ethical responsibility expected during Pharmaceutical	AFT-	MK	K	SDL	P-PRF	F&S	III	

	preparation of Ayurvedic Formulations	REC							
Topic 3 3.Rasa Dravya Aushadhi Nirmana Practicals									
CO1,CO2,CO3	Explain reference Shloka of kalpas & write with interpretation -list of ingredients, their proportion, principles of yoga - yoga samyojana dravya	CC	MK	KH	L	P-VIVA,P-EXAM	F&S	I	
CO1,CO2,CO3	Identify raw Dravya ,used part with classical Mana and interpret in metric system....	CAP	MK	D	DIS,BS	P-EXAM	F&S	I	
CO2,CO3	Identify, Utilize & know mechanism of Yantra used for drug preparation	CAP	MK	KH	DIS,BS	VV-Viva	F&S	I	
CO2,CO3	Observe & Record various parameters responsible for good manufacturing which are done during process of phamaceutical preparation	CE	MK	SH	DIS,BS,PT	P-EXAM	F	I	
CO2	Demonstrate Sidhdhi Lakshna	CAP	MK	SH	D	P-VIVA	S	III	
CO2,CO3	Assess finished product as per classics.	CE	MK	SH	DIS,PT	P-VIVA,P-EXAM	S	I	
CO1,CO2,CO	Appraise peculiarities of chaturvidha rasayana preparation	AFT-	DK	KH	PER	M-POS	F	III	

4		VAL							
Topic 4 4.Bheshaja Kalpana Practicals -I									
CO1,CO3	Demonstrate Arka preparation method, along with its packaging technique and therapeutic importance.	PSY-SET	MK	SH	DIS,D-M	P-VIVA,P-EXAM	F&S	II	
CO1,CO3	Demonstrate prepration of Vati along with drying techniques	PSY-MEC	MK	KH	DIS,D	P-VIVA,P-EXAM	F&S	II	
CO1,CO3	Identify the genuine sample of Guggulu and demonstrate preparation of different types of Guggulu along with drying techniques	PSY-SET	MK	K	DIS,PT	P-VIVA,P-EXAM	F&S	II	
CO1,CO3	Identify the useful part of the raw material and demonstrate Sattva preparation method.	PSY-SET	MK	K	DIS,D	P-VIVA,P-EXAM	F	II	
CO1,CO3	Demonstrate prepration of Varti along with drying and packaging techniques.	PSY-SET	MK	KH	PT	P-VIVA,P-EXAM	F	II	
CO1,CO3	Demonstrate Lavana preparation methods, along with its packaging techniques.	PSY-SET	DK	SH	PT	P-VIVA,P-EXAM	F	II	
CO1,CO3	Identify the internal and external applications of different kshara kalpana along with importance of ksharasutra through surgical aspects.	PSY-ADT	MK	K	PT	P-VIVA,P-EXAM	F	II	V-SHL
CO1,CO3	Demonstrate and Explain preparation methods of Masi kalpana for its internal or external application in clinical practice.	PSY-ADT	DK	K	DIS,PT	P-VIVA,P-EXAM	F	II	
CO1,CO3	Demonstrate preparation and application aspects of Upanaha kalpana .	PSY-MEC	DK	K	DIS,PT	P-EXAM	F&S	II	V-KC
CO1,CO3	Demonstrate preparations of Sikta taila along with identify the genuine sample of Sikta.Perform and Describe Malahara kalpana preparation method with its confirmatory tests of end point. .	PSY-SET	DK	K	DIS,PT	P-VIVA,P-EXAM	F&S	II	

CO2,CO3	Demonstrate preparation of different types of Malahara with its applied aspect.	PSY-SET	NK	K	PT	P-SUR	F	II	V-KC
CO2,CO3	Demonstrate preparation of different types of Lepa and preparation of Shatadhouta ghrita .	PSY-SET	NK	KH	DIS,PT	PRN	F	II	V-KC ,V-PC
CO2,CO3	Perform and Describe Lepa kalpana preparation method with its confirmatory tests and precautionsExplain therapeutic importance of prepared Lepa kalpana, integration with Kayachikitsa and Panchakarma department along with its shelf life and packaging techniques.	PSY-MEC	DK	SH	L&GD	P-VIVA,P-EXAM	F&S	II	V-KC
CO2,CO3	Observe demonstration of formulation of Danta manjana	CAP	NK	KH	L&GD	PRN	F	II	
Topic 5 5.Bheshaja Kalpana Practicals -II									
CO1,CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Ghrita Murchana and Taila Murchana	PSY-MEC	MK	D	PT,D	P-REC,P-EXAM,OSPE	F&S	II	
CO1,CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Jatyadi Gritha/ Triphala Gritha/ Ksheera Shatphala Gritha/Phala Gritha,	PSY-MEC	MK	D	PT,D	P-EXAM,OSPE	F&S	II	
CO1,CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage Ksheera Bala Taila/Kasisadi Taila/ Panchaguna Taila/ Arka Taila/Kutajasuryapaki taila	PSY-MEC	MK	SH	D	P-EXAM,OSPE	F&S	II	

CO1,CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage Bhallataka Taila Patana/ Jayapala Taila Patana/Vishvamitra Kalpa Sneha	PSY-MEC	DK	KH	D	P-VIVA,P-EXAM,OSPE	F	II	
CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Vasavaleha/ Chavana Prasha Avaleha/ Kushmanda Avaleha	PSY-MEC	MK	KH	D	P-VIVA,P-REC,P-EXAM	F&S	II	
CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Nimbu Sharkara	PSY-MEC	NK	SH	D	P-EXAM,OSPE	F	II	
CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Daruharidra Rasakriya	PSY-MEC	NK	SH	D	PRN	F	II	
CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Haridra Khanda/ Narikela Khanada	PSY-MEC	MK	D	D	P-VIVA,P-EXAM,OSPE	F&S	II	
CO1	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the	PSY-MEC	MK	KH	D	T- EW,P-VIVA	F&S	II	

	Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Kumaryasava/Drakshasava								
CO1,CO2	Demonstrae the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlisting the results, packing and storage of Kutajarista/Ashokarishta/Takrarishta	PSY-MEC	MK	KH	D	P-VIVA	F&S	II	
CO2	. Demonstrate the SoP involved in the drug selection, measuring the appropriate quantity of ingredients, preparation, observe the Physical Changes, Siddhi lakshana, enlist the results, packing techniques and storage of unique formulations for e.g.Kanji/ Madushukta	CC	DK	KH	D	P-VIVA,COM	F&S	II	
Topic 6 6.Dosage Forms & Self-care Products Practicals									
CO1,CO2,CO6	Observe instruments used to prepare soliddosage form, liquid dosage form and Semisolid Dosage Form with one example for each , their method of preparation, ingredients used with their quantity and Quality control Parameters.	AFT-RES	DK	KH	W,PT,D	P-VIVA,CHK	F&S	III	
CO1,CO2,CO6	Observe instruments used to prepare with one example for each , their method of preparation, ingredients used with their quantityand Quality control Parameters.of following self care productsHair care: Shampoo Body care :Soap, Perfume Face care : Face Pack/Talcum Powder Lip Care : Lip Balm, Lipstick Oral care: Tooth Paste/ Mouth Wash Foot Care: Foot Cream Hand Disinfectant : Hand SanitizerSkin Care: Moisturizer, Sunscreen Lotion following self care products	PSY-ADT	DK	KH	L_VC,PT,D	P-VIVA,P-EXAM,CHK	F&S	III	
Topic 7 7.Field Visit/ Study Tour									
CO1,CO3,CO4,CO5,CO6	Field Visit - Record the storage condition of the raw / in-process	CK	DK	K	DIS,FV	M-POS,COM	F	III	

	/ finished goods prepared in the approved sections.								
CO1,CO3,CO4,CO5,CO6	Determine the role of various Yantras / machineries used in the approved sections of the Pharmacy	CK	DK	KH	DIS,RLE	INT	F	III	
CO1,CO3,CO4,CO5,CO6	Differentiate between the ancient and contemporary methods of drug preparation.	CC	DK	K	DIS,FV	PRN	F	III	
CO1,CO3,CO4,CO5,CO6	Enlist the documents required in Batch Manufacturing of Ayurvedic medicines.	CK	NK	K	DIS	P-SUR	F	III	
CO1,CO3,CO4,CO5,CO6	Identify the role of Quality Control instruments and equipments in ensuring a quality Ayurvedic product.	CK	DK	K	L&PPT,DIS	DEB	F	III	
CO1,CO3,CO4,CO5,CO6	Appreciate the importance of Good Manufacturing Practices and Good Packaging Practices required in Ayurvedic Drug manufacturing.	AFT-VAL	DK	K	DIS	PRN,DEB	F	III	
CO1,CO3,CO4,CO5,CO6	Prepare own products as per prevalent FDA guidelines.	PSY-GUD	DK	D	L_VC,DIS	P-EXAM	F	III	
Topic 8 8.Hospital IPD Practical									
CO1,CO2,CO3,CO4	Review & Observe the case Sheets.	CC	NK	KH	DIS	P-SUR	F	III	V-KC,V-SH,V-PC,V-SHL,V-S

									P,V-BL
CO1,CO2	Discuss for formulation prescription manner.	CC	DK	KH	L&GD	T-CS	F&S	III	V-KC
CO1,CO2,CO3	Demonstrate & Explain prescription method.	CAP	DK	SH	CD	P-PS	F&S	III	V-KC
CO1,CO2,CO4	Measure dose of prescribed drug.	CAP	MK	KH	PrBL	SP	F	III	
CO1,CO2,CO3	Enlist Time, Duration, Pathya, Apathya while prescribing drugs.	CAP	DK	KH	L&GD	P-PRF	F	III	
CO4,CO5	value details and methodical writting of case records of hospital IPD patients	AFT-VAL	MK	KH	RLE	P-CASE	F	III	
Topic 9 9. Drug Dispensing Practical									
CO1,CO3	Assess the arrangement of Ayurvedic drugs according to nature and type in dispensing room or pharmacy.	CAP	NK	D	RLE	P-PRF	F	III	V-KC,V-PC,V-BL
CO1,CO3,CO4	Assess practice of prescription processing and labelling of the drugs.	CE	DK	KH	PrBL	INT	F	III	
CO3,CO4	Determine and identify the cause of common errors occurred	CC	DK	KH	RLE	CL-PR	F	III	

	during dispensing of Ayurvedic drugs.								
CO2,CO4	Explain use of correct drug supply to the right patients, in the required dosage, quantities and clear drug information.	CAP	DK	SH	L&GD	PRN	F	III	V-KC,V-BL
Topic 10 10.Quality Control Practicals									
CO2	Develop analytical skills for understanding Identity, Purity and Strength of raw materials and finished products as per the standard guideines of the Ayurvedic Pharmacopoeia of India.	CK	MK	KH	L&GD,BS,W,PT,D_L	P-VIVA	F	II	
CO2,CO5	Identify the geological description of minerals: physical parameters.	CK	DK	K	L_VC,W,D_L,FV	P-ID	F&S	II	
CO2	Describe ayurvedic perspectives of quality control parameters applying for solid, semisolid and liquid dosage forms.	CAP	MK	SH	L&GD,TUT,DA	P-VIVA,Log book	F&S	II	
CO2,CO5	Demonstrate the calibration techniques used for Weighing Balance (chemical and physical), pH Meter, Hot Air Oven and Electric Muffle Furnace to ensure the accuracy of the instrument what it is intended to measure.	CC	DK	KH	D_L	P-VIVA,PRN	F	II	
CO2		CAP	MK	SH	PT,D	P-EXAM,Log	F	II	

	Demonstrate bulk density, loss on drying, total ash, pH and water soluble extractives of Churna.				A	book			
CO2	Perform the analytical tests of tablets/ vati/ gutika for hardness, uniformity of weight and friability.	AFT-CHR	MK	SH	PT,DA	P-EXAM,Log book	F&S	II	
CO2	Estimate specific gravity, alcohol content and total solids of Asava & Arishta.	AFT-CHR	MK	SH	PT	P-EXAM,P-PRF	F	II	
CO2,CO5	Determine iodine value, acid value and saponification value of oils / ghee.	CAP	MK	KH	D_L	P-VIVA	F&S	II	
CO2,CO3	Calculate the dose of various dosage forms and their dispensing methods.	CE	MK	SH	L&GD,PrBL,BL,RLE,D_L	P-SUR,P-CASE	F&S	II	
CO4,CO5	Appraise quality control procedures done for Ayurvedic formulations	AFT-VAL	DK	K	DIS	CL-PR	F	III	

Table 4a: List of Practical

S.No	Name of practical	Term	Activity	Practical hrs
1	1.Paribhasha concept basedPracticals	1	**A) Dravya Paribhasha-** Identification of drugs and their respective class (varga) **B) Prakriya Paribhasha-** **1.Swedana:** Godanti Shodhana (A.F.I.-1,18:4 (Rasatarangini 11/238) Shankha Shodhana (A.F.I.-1,18:18(Rasatarangini 12/12/2) Kapardika shodhana (Rasatarangini 12/89) Guggulu Shodhana (Rasendra Sara Sangraha 1/386, Pg. 117 **2. Mardana**:Parada Samanya Shodhana (Ayurveda Prakasha 1/165) **3. Dhalana :** Gandhaka Shodhana (A.F.I. 2 Parishishta - 2,9 Shodhana(Rasamrita 2, 3) Vanga Shodhana (A.F.I.-1,18:15 (Sharangadhara M.11/2) Yashada shodhana (Rasatarangini 19/99) **4. Nirvapa**: Abhraka Shodhana (A.F.I.-1,18:1 (Rasatarangini 10/20) Tamra Shodhana (A.F.I.-1,18:5 (Ayurveda Prakasha 3/118) **5. Nirjaleekarana :** Tankana Shodhana (A.F.I. 2 Parishishta -2,15 Shodhana (Ayurveda Prakasha 2/244) Kankshi shodhana (A.F.I.-2, 14:3 (Ayurveda Prakasha 2 /258) **6. Bhavana:** Hingula Shodhana (A.F.I. 2 Parishishta - 2 Shodhana (Rasamruta 1/54) **7. Bharjana:** Gairika Shodhana (A.F.I. 2 Parishishta - 2,11 Shodhana (Rasaratna Samuchchaya 3/49) Hingu Shodhana (Bhavprakash Nighantu, Haritakyadi Varga, 1/101, Pg. 42) **8. Nimajjana/Sthapana:** Vatsanabha shodhana (A.F.I. 2 Parishishta - 2,25 Shodhana (Rasamrita parishishta 8:145) 9. Jarana : Vanga Jaran (Ayurved Prakash 3/159) Vanga Bhasma (A.F.I.-1,18:15 (Rasamruta 3/94) **10. Murchana:** Mugdha Rasa (Rasatarangini 6/9) Kajjali (A.F.I.- 1 Parishishta-1, Paribhasha 21 (Rasatarangini 2/27) **11. Druti-** Gandhaka Druti(Rasa Ratna Samuchchaya 3/29) **C) Pramanikarana Paribhasha-**	20

			1) Bhasma Samanya Pareeksha - Abhraka Bhasma (Ayurved Prakash 2/104) Shankha Bhasma (Rasaratnasamucchaya 8/26-30) **2) Bhasma Vishesha Pareeksha:** Tamra Bhasma (Dadhi/ Nimbu Pariksha)-(Bhaishajya Kalpana Vigyan, Vd. Siddhinandan Mishra, Pg. 78) **D) Namburi Phased Spot Test (NPST)**	
2	2.Panchavidha Kashaya Kalpana & their Upakalpana Practicals	1	**1.Swarasa Kalpana:**Tulasi swarasa (Sharangdhar Samhita Madhyam Khanda 1/2),Ardraka Swarasa (Sharangdhar Samhita Madhyam Khanda 1/2), Vasaputapaka Swarasa (Sharangdhar Samhita Madhyam Khanda 1/22-23 & 34) **2. Kalka Kalpana:** Nimba kalka (Sharangdhar Samhita Madhyam Khanda 5/1),Rasona Kalka (Sharangdhar Samhita Madhyam Khanda 5/1) **3. Kwatha Kalpana:** Punarnavashtaka kwatha (Sharangdhar Samhita Madhyam Khanda 2/1-2, 78-79), Rasna Saptaka Kwatha (Sharangdhar Samhita Madhyam Khanda 2/1-2, 88-89) **4. Hima Kalpana:**Dhanyaka Hima (Sharangdhar Samhita Madhyam Khanda 4/1, 7-8),Sarivadi Hima **5. Phanta Kalpana:**Panchakola phanta (Sharangdhar Samhita Madhyam Khanda 3/1-2),Yashtimadhu phanta (AFI 1 Parishishta – 1,2/5 Paribhasha) **6. Churna Kalpana:**Sitopaladi churna (AFI Part 1, Vol. 1 A, Pg. 348), Hingwastaka Churna (AFI Part 1, Vol. 1 A, Pg. 353) **7. Pramathya:**Mustadi Pramathya (Sharangdhar Samhita Madhyam Khanda 2/ 152-153) **8. Paneeya Kalpana:** Shadanga Paneeya (Sharangdhar Samhita Madhyam Khanda 2/ 159-160) **9. Mantha Kalpana:** Kharjuradi Mantha (Sharangdhar Samhita Madhyam Khanda 3/9-10) **10. Panaka Kalpana:** Chincha Panaka (Bhaishajya Ratnavali Arochaka 18/34-35), Chandana Panaka **11. Ksheerapaka Kalpana**: (Sharangdhar	24

			Samhita Madhyam Khanda 2/175-176), Arjuna Ksheera Paka - Chakradatta, Lashuna Ksheerapaka - Charaka Chikitsasthana 5/95 **12. Udaka Kalpana :** Tandulodaka (Sharangdhar Samhita Madhyam Khanda 1/28) Note: In each category if more than 1 practical are there any one or all may be performed.	
3	3.Rasa Dravya Aushadhi Nirmana Practicals	1	**1. Marana :**Vanga Bhasma (A.F.I. - I, Bhasma, 18:15, Rasatarangini Taranga) / Sankha Bhasma:A.F.I. - I, Bhasma, 18:18, Rasatarangini taranga 12/2) **2. Kharaliyarasayana :**Ananda Bhairava Rasa(A.F.I. - I, Rasayoga, 20:3, Rasendrasarasangraha Jwaradhikara 2/103-105) /, Tribhuvana Keerti rasa(A.F.I. - I, Rasayoga, 20:20, rasamrita 9/80-81) **3. Parpati :** Rasa Parpati(A.F.I. - I, Parpati, 16:3, Bhaishajyaratnavali grahanirogadhikara 414-416&436-440), Sweta Parpati(A.F.I. - II, Parpati, 12:2, siddhyogsangraha ashmarimutrakruchhaadhikara) **4. Kupipakwarasayana :** Rasasindhura(A.F.I. - I, Kupipakwa Rasayana, 15:6, rasatarangini taranga 6/162-176) **5.Pottalirasayana :**Rasagarbhapottali (Rasayogsagar dwitiyabhaga pottali rahasya page 582) **6. Rasa :** Laghusutsekhararasa (Rasatantrasara avum siddhaprayogsangraha part-1, kharaliya rasayana page 274) **7. Loha:** Navayasa loha(A.F.I. - II, lauha, 17:2, Charaka samhita chi.16/70-71)/, Saptamrita loha(A.F.I. - I, lauha, 21:11, Bhaishajyaratnavali shoolrogadhikara 83-84)	20
4	4.Bheshaja Kalpana Practicals -I	2	**1. Arka Kalpana:** Yavani Arka (API, Part 2, Vol. 3, Pg. 24) Gulab Arka (API, Part 2, Vol. 3, Pg. 4) Misreya Arka (AFI, Part 1, Vol. 1 A, Pg. 106)	24

			2. Vati Kalpana: Agni Tundi Vati (AFI, Part 1, Vol. 1 A, Pg. 497) Chitrakadi Vati (API, Part 2, Vol. 3, Pg. 107) Lavangadi Vati (API, Part 2, Vol. 3, Pg. 116) **3. Guggulu Kalpana:** Triphala Guggulu (API, Part 2, Vol. 2, Pg. 134) Kaishor Guggulu (API, Part 2, Vol. 1, Pg. 94) **4. Satva Kalpana:** Amruta Satva (AFI, Part 1, Vol. 1 A, Pg. 560) Ardraka Satwa **5. Varti Kalpana:** Phala Varti - (Bhaishajya Ratnavali 31/10) Chandrodaya Varti (AFI, Part 1, Vol. 1 A, Pg. 553) **6. Lavana Kalpana:** Arka Lavana (API, Part 2, Vol. 1, Pg. 103) Narikela Lavana (AFI, Part 1, Vol. 1 A, Pg. 473) **7. Kshara Kalpana:** Apamarga Kshara (AFI, Part 1, Vol. 1 A, Pg. 466) Kshara Sutra Preparation (AFI Part 3, Pg 213) **8. Masi Kalpana:** Triphala Masi (Rasendra Sara Sangraha Upadamsha Chikitsa) Mayura Piccha Masi (Yogratnakar , Chhardiroga, Pg. 453) **9. Upanaha:** Atasi Upanaha **10. Manjana:** Dashanasamskara churna (Bhaishajya Ratnavali Mukharog, 61/97-98) **11. Malahara Kalpana**: Siktha Taila (Rasatarangini 4/59) Sarjarasa Malahara (Rasatantrasar & Siddha Prayog Sangrah Part 1, Pg. 849) Gandhaka Malahara (Rastarangini 8/63-85) **12.Lepa Kalpana:** Dashanga Lepa (AFI, Part 1, Vol. 1 A, Pg.	

			487) Shatadhouta Ghrita (Sushrut Samhita Uttartantra 39/283)	
5	5.BheshajaKalpana Practicals -II	2	**1. Sneha Kalpana:** Ghrita Murchana (Bhaishajya Ratnavali, Jwaradhikar, 1285), Taila Murchana (Bhaishajya Ratnavali, Jwaradhikar, 1286-1287) **2. Ghrita Kalpana:** Triphala Ghrita (API, Part 2, Vol. 1, Pg. 90), Amruta Ghrita (Bhaishajya Ratnavali Vatarakta 27/126) **3. Taila Kalpana**: Ksheera Bala Taila (API, Part 2, Vol. 1, Pg. 124), Arka Taila(Sharangdhar Samhita Madhyam Khanda 9/148) **4. Taila Patana:** Bhallataka Taila Patana (Sushrut Samhita Chikitasa Sthana 1/92) **5. Avaleha Kalpana**: Vasavaleha (API, Part 2, Vol. 1, Pg. 32), Kushmanda Avaleha (AFI, Part 1, Vol. 1 A, Pg. 35) **6. Sharkara Kalpana:** Nimbu Sharkara (Rasatantrasara & Siddhaprayog Sangraha I / Paka Avaleha) **7. Ghana**: Kutaja Ghana(AFI Part 2, Pg 175), Guduchi Ghana (Ayurved Prakash 3) **8. Khanda Kalpana**: Haridra Khanda (Bhaishajya Ratnavali Udarda, Shitapitta), Narikela Khanda (AFI, Part 1, Vol. 1 A, Pg. 41) **9. Asava :** Lohasava (Sharangdhar Samhita, Madhyam Khanda 10/ 34-38), Drakshasava (AFI Part 2, 1:1) **10. Arishta:** Arjunarishta (Bhaishajya Ratnavali Hridrog). Takrarishta (Charak Samhita Chikitsa 15 / 120) **11. Shukta Kalpana:** Kanji (Sharangdhar Samhita, Madhyam Khanda 10/ 12), Madushukta (Bhaishajya Ratnavali Karnaroga 62 /23-24)	22
6	6.Dosage Forms & Self-care Products Practicals	2	**1. Solid dosage forms:** • Granules/ Lozenges (Pharmaceutics by R.M. Mehta)	22

			2. Liquid Dosage forms: • Syrup/Suspension/Emulsion/Liniment (Pharmaceutics by R.M. Mehta) **3. Semisolid Dosage:** • Cream/Gel/Ointment/Pain Balm (Pharmaceutics by R.M. Mehta) **4. Hair Care:** • Shampoo (A Handbook of Cosmetics by B M Mithal & R N Saha 8th chapter) **5. Body Care:** • Soap/Perfume (Pharmaceutics by R.M. Mehta) **6. Face Care:** • Face pack / Talcum Powder (A Handbook of Cosmetics by B M Mithal & R N Saha 3rd chapter) **7. Lip Care:** • Lip Balm, Lipstick (A Handbook of Cosmetics by B M Mithal & R N Saha 4th chapter) **8. Oral Care:** • Tooth Paste/ Mouth Wash (A Handbook of Cosmetics by B M Mithal & R N Saha 19th & 20th chapter) **9. Foot Care:**		

			• Foot Cream (A Handbook of Cosmetics by B M Mithal & R N Saha 5th chapter) **10. Hand Disinfectant:** • Hand Sanitizer ((Pharmaceutics by R.M. Mehta) **11. Skin Care:** • Moisturizer/Sunscreen Lotion (A Handbook of Cosmetics by B M Mithal & R N Saha 6th chapter) **Note: In each category if more than 1 practical are there any one or all may be performed.**	
7	7.Field Visit/ Study Tour	3	GMP Certified Pharmacy Visit X 2 Pharmacy (1 classical formulations and 1 Proprietary formulations/Having both Manufacturing facility) NABL Accredited drug Testing Laboratory/Research and Development Unit Combined out campus/ Field visit may be planned wherever feasible	24
8	8.Hospital IPD Practical	3	Hospital IPD Practical: Formulation prescription, method administration, dose, time, duration, Pathya, Apathya advised - Minimum 10 case sheet record of different dosage forms prescribed for particular case/ disease	10
9	9. DrugDispensing Practical	3	Drug Dispensing practical for method of Dispensing different dosage forms, their packing for OPD and IPD patients	6
10	10.Quality Control Practicals	2	• **1 Minerals & Metals** Mineral Identification • Physical form – Crystal and	38

			Amorphous • Hardness on Moh's scale • Brittleness test • Fracture and Cleavage • Streak Test • Luster **2 Plant Material** • Estimation of Foreign matter • Specific Gravity • Refractive Index **3. Prepared Dosage forms** A. Solid Dosage Forms Rasaushadhi • Bhasma and Pishti Pariksha • Determination of Moisture content **4. Kashtoushadhi** a. Churna • Particle Size • Bulk Density • Determination of Ash Value – Total Water Soluble/Acid Insoluble ash b. Tablets • Uniformity in Weight and Size • Tablet Hardness B. Semisolid Dosage forms • Moisture Content • Microbial Load C. Liquid Dosage Forms • PH Value • Refractive Index • Specific Gravity • Saponification Value • Iodine Value • Acid Value • Viscosity **Note :** • All Practical should be performed in Accordance of Methods published in protocol for testing of ASU Medicines and	

			Laboratory Guide for Analysis of Ayurveda & Siddha formulations published by Dept of AYUSH, GOI • Minimum 5 Analytical Practicals are to be written in Practical Record or In Journal	
				Total Hr	**210**

Activity

CO	Topic name	Activity Details	Hours#
CO1,CO2	Paper I -1. Chronological development of Ayurvediya Aushadhi Nirmana	**Objective** - To orient the students regarding chronological development of Rasashastra & Bhaishajya Kalpana After completing this activity, students will be able to: • Describe the history of Rasashastra & Bhaishajya Kalpana. • Identify the different types of metal-based medicines. • Explain the benefits of metal-based medicines. • Discuss the safety of metal-based medicines. **Methodology** 1) All students are to be assigned to collect and compile information on chronological	1

		development of Rasashastra & Bhaishajya Kalpana from different books, including Indians are the first, who introduced metal based medicines. 2) Ask to Submit the assignment for signature	
CO1,CO2	Paper I - 2. a) Paribhasha(Terminology)	**Rasadravya** **Objective** - To encourage the students to remember rasadravyas and their classification through games **Activity** **Group I** -In one big tray all Rasa - Dravyas are to be kept together. Timer to be started. In a stipulated time, student has to collect drugs belonging to the particular class (rasadravya varga) allotted to him /her and create a heap in order This can be given in a group. **Group 2.**-Word puzzle Various word puzzles can be created for making the students to remember names of rasadravyas along with their class.	1
CO1,CO3	Paper I -2. b)Paribhasha	**Mana Paribhasha Objective** - After completing this activity, students will be able to:	2

		• weigh dry & wet drugs • Understand the % of weight loss after drying different variety of the wet drugs • Enjoy (game based) learning about rasadravyas and their classification. **Methodology-** whole batch need to be divided into various groups. (4-5 students in each group). Each group need to make a chart/ task as per the instructions written on the paper they pick up. 1) Collect seeds mentioned in the classical mana paribhasha and prepare chart describing details of mana 2) Measure by weight the given drug. (Guduchi Bharad, Amalaki Bharad, Haritaki Churna, Nimbapatra churna, whole maricha all will be kept having same weight) Now observe how much volume these drugs have. 3) Collect fresh Guduchi.500gm or any fresh drugs leaf, bark, flower etc. Keep on observing the reduction in the weight of the sample till it dries completely. Record weight every day. Discussion about observation will be done. Do this same for Vasa, Shatavari, Amalaki also. Compare and assess the results. Every year drugs need to be changed	
CO1,CO2	Paper I -2. c)Paribhasha Terminology	**Shodhana**	1

Objective - To enhance ability of the students to recall their knowlege about rasadravyas and their procedures

At the end of Activity, the students should be able to

Recall the different shodhana methods that are used for rasadravyas.

• Identify the different yantras that are used for shodhana.

• Understand the different procedures that are used for shodhana.

• Correctly answer questions about shodhana methods, yantras, and procedures.

• Explain the different steps involved in the shodhana process.

• Discuss the benefits of shodhana for rasadravyas.

Activity-

Rapid Fire quiz online

Questions will be framed based on the knowlegde of Yanra, Dravya, Method used for that drug etc and rapid fire round will be carried out.This can be done online

Questions for example-

1) Vanga Shodhan is done by which method?

2) Which yantra is used for Shankha Shodhan?

		3) LashunaSvarasa bhavana is used for shodhana of which drug?	
CO1,CO2	**Paper I- 3.Adharabhuta Siddhanta (Fundamental Principles)**	**Objective :** To understand the concept with the help of classical shloka & application of fundamental principles of Ayurvediya aushadhi nirmana. **After completing this activity, students will be able to:** • Identify the different fundamental principles of Ayurvediya Aushadhi Nirmana. • Illustrate how these principles are applied in the preparation of Ayurvedic formulations. • Interpret classical shlokas related to the application of fundamental principles using Panchavayavavakya. • Demonstrate the skill of interpreting classical shlokas using Panchavayavavakya. • Students are to be divided into 5 groups • Each group need to be given 2 Shlokas from particular classical text book **Method of Activity:** 1. The students are divided into groups & each group need to be allotted 1 to 2 shlokas from classics related to application of fundamental principles. 2. To develop skill of interpretation of shloka by applying Panchavayava vakya i.e Pratignya,	2

		Hetu, Udhaharana,Upanaya and nigamana 3. They will understand application of basic fundaments. 4. Every year different sets of shlokas are to be given. Repetition of shlokas is not acceptable **Discussion:** After completion of task, discussion need to be held with teacher and students. Teacher in charge will finally conclude the discussion on application of fundamental principles and understanding the shloka by applying Panchavayavavakya. **Optional Activity** Activity - 1 Title : Search references from classical text Group : Students should be divided in to 10 groups. Reference Text : 1.Chakradatta 2.Yogaratnakara 3.Bhavaprakasha 4.Sharangadhara 1GP : DravyaSamgraha method 2 GP : Collection Time 3 Gp :Collection Part 4 GP : Examples of Samskara 5 GP :Collection Nakshatra 6 GP :Pranija dravya partcollection 7 GP :Duplication Yoga 8 GP : Namakarana on Mana/Number of Dravya 9 GP : Saveeryata Avadhi 10 GP : Anupana in classical Yoga	

CO1,CO5	**Paper I** **-4.Yantropakaranani - I (Equipments and machineries)**	**Objectives:-** After completing this activity, students will be able to: • Identify the different yantras that are used in the preparation of Ayurvedic formulations. • interpret the different procedures of drug preparation that use yantras. • Collect information on different yantras from classical text books. • Present their findings in a clear and concise way. **Actvity** • Students need to be divided into 4 groups (15 to 25 students in each group) • Each group need to be given one reference book • They have to collect information on different yantras explained /used for different procedures of drug preparation from that book. • Books like Ananda kanda, Rasa Tarangini, Rasa Ratna Samuchyaya, Rasendra Sara Sangraha, Parada Samhita etc can be given • Every year digfferent books are to be given. • Each Group has to present/ Submit assignment on total no of Yantras mentioned, their different uses, Structure/ Picture etc **Discussion**: In charge teacher will comment on particular group performance and study matter	4

		collected.	
CO1,CO5	**Paper I** **-5.Yantropakaranani - II (Equipments and machineries)**	**Objective:-** After completing this activity, students will be able to: • Prepare a video/ppt demonstration on Musha, Koshthi and Puta. • Model the preparation of Musha, Koshti and Puta. • Collect literature on Musha, Koshti and Puta from classical text books as per different authors. • Identify modern/presently available Yantras based on the classical concept of Musha, Koshti and Puta. **Actvity** **Students are to be divided into 4 groups** **Group I-** is allotted to prepare video/ppt demonstration **Group II**-Model preparation of Musha, Koshthi and Puta **Group III-** Literature collection from classical text books as per different authors on Musha, Koshthi and Puta **Group IV** - Modern / Presently available Yantras based on the classical concept of our yantra, Musha, Koshthi and Puta **Note:** Every year different yantras/ instruments need to be given	4

		Discussion and Conclusion: Each group has to present their activity followed by teacher's remark	
CO1,CO2	**Paper I- 6. Kalpana Nirmana I(Primary & Secondary dosage forms)**	**Objective:-** **After completing this activity, students will be able to:** • Identify the different dosage forms that are commonly used in Ayurveda. • Appraise the different methods that are used to prepare these dosage forms. • Document the different activities that are performed at home and in communities/societies related to the preparation of these dosage forms. • Prepare two dosage forms in the laboratory from their observation of home preparations. **Methodology:** 1. Every student will document different activities performed at home and in societies/communities related to the preparation of different dosage forms which come under Panchavidha kashaya kalpana , Upakalpana and their household applications.(for example-fruit juices belong to svarasa kalpana, chutney to kalka etc.) Discussion: 1.The students will be assessed based on their documentation 2. A group containing 10 number of students will be asked to collect the raw materials and prepare	4

		minimum two numbers of dosage forms in the laboratory from their observation of home preparations. 3. Finally an interactive session will be held to discuss the learning experiences and to clear doubts	
CO5	Paper I- 7 & 11. Kalpana Nirmana II &III (Method of preparation of different dosage forms & dietary supliments)	**objective: -** **After completing this activity, students will be able to:** • Identify the different dosage forms that are commonly used in Ayurveda. • Appraise the different methods that are used to prepare these dosage forms. • Document the different activities researches related to the preparation of these dosage forms. **Methodology: -** 1.Students need to be divided into 4 different groups. 2.**Group 1** - Directed to collect information on different varieties of proprietary Ayurvedic and contemporary solid dosage forms available in the market through e-resources (e.g. tablets, capsules, lozenges etc) 3.**Group 2**- Directed to collect information on different varieties of proprietary Ayurvedic and contemporary Liquid dosage forms available in the market through e-resources (e.g. Oils, syrups, suspensions etc) 4.**Group 3** - Directed to collect information on	10

		different varieties of proprietary Ayurvedic and contemporary semisolid dosage forms available in the market through e-resources (e.g. ointments, gels, jellies etc) 5.**Group 4** - Directed to collect research articles published on modification of classical Ayurvedic dosage forms through e-resources on solid, liquid and semisolid dosage forms. Discussion: -Finally Students have to present the collected information in the form of power point presentation and submit the assignment. In charge teacher has to conclude by stressing upon scope for research and development in modification of classical dosage forms. The mentioned activity is an example. **Note:** Every year different formulations/ dosage forms/ activity need to be given.	
CO1,CO2,CO3	**Paper I- 8.Rasa Dravya Parichaya - I MK**	**Objecives:-** **After completing this activity, students will be able to:** • Justify the importance of identifying genuine Rasa Dravyas. • Learn to interpret classical and mineralogical criteria for identifying Rasa Dravyas. • Communicate findings effectively **Method of Activity:** 1. Students are to be divided into 4 to 5 groups 2. Each group is to be given 5 Rasadravyas (from	4

		must to know dravya list). 3. Students will be instructed to collect raw samples/ Pictures / Photos of assigned Rasa Dravya 4. Students have to interpret classical as well as mineralogical criteria for identifying that Rasa Dravya. 5. Encourage them to develop the skill of identification of various Rasa Dravyas and to understand its necessity. **Discussion & Conclusion** Each Group has to share the presentation. Finally, teacher has to give concluding remarks. **Note:** The mentioned activity is an example. Every year different sets of drugs/ activity need to be given.	
CO1,CO2,CO3	**Paper I-9.Rasa Dravya Parichaya II - DK**	**Objectives :-** **After completing this activity, students will be able to:** • Document the different rasa dravyas that are considered to be desirable to know. • Gather information about each rasa dravya, such as its Sanskrit name, English name, synonyms, botanical name, physical appearance, taste, and medicinal properties. • Present the findings in a clear and concise way.	6

		• Debate and justify that their drug is more superior than other drugs in the same group. **Method of Activity:** 1. Students are to be divided into 4 groups 2. The students will be instructed to refer and collect photos, general information, medicinal uses from classical text books and e resources. 3. Each group is to be given 2 drugs. 4. The mentioned activity is an example. Every year different rasadravya / activity need to be given. **Discussion:** After the completion of compilation of desirable to know Rasa Dravya, each group will present short review of their work in front of the class and they have to debate and justify that their drug is more superior than other drugs in the same group. Finally, teacher have to give concluding remark on debate.	
CO3	**Paper I- 10.Rasa Dravya Parichaya - III NK**	**Objectives :-** **After completing this activity, students will be able to:** • Document the different rasa dravyas that are considered to be desirable to know. • Gather information about each rasa dravya, such as its Sanskrit name, English name, synonyms, botanical name, physical appearance,	6

		taste, and medicinal properties. • Present the findings in a clear and concise way. • Debate and justify that their drug is more superior than other drugs in the same group.To compile, understand and document basic information about certain Rasa Darvyas. (this activity is for nice to know dravyas) **Methodology:** 1. Students are to be divided into 4 groups 2. The students will be instructed to refer and collect photos, general information, medicinal uses of given dravyas from classical text books and e resources. 3. Each group is to be given 4 drugs. 4. The mentioned activity is an example. Every year different drugs/ activity need to be given. **Discussion:** After the completion of compilation of nice to know Rasa Dravya, each group will present short review of their findings, in front of class and they have to debate and justify that their drugs are more superior than other drugs. Finally, teacher have to give concluding remark on debate. Note: Every year different drugs are to be given.	

CO1,CO2,CO3,CO5	**Paper I - 12.Chaturvidha Rasayana -MK**	**Objectives:-** • Collect information on different Chaturvidha Rasa formulations. • Identify the different manufacturing companies that produce Chaturvidha Rasa formulations. • appraise the different classical references that are used to manufacture Chaturvidha Rasa formulations. • Compare the MRP (prices) of different Chaturvidha Rasa formulations. • Identify the indications for different Chaturvidha Rasa formulations. • Analyze the different Chaturvidha Rasa formulations and develop critical thinking skills. • Communicate their findings effectively to the class. **Method of Activity: (Survey)** **Students are to be divided into 5 groups** **1. Group 1-** Need to be assigned to collect information on Swarna Bhasma manufacturing companies, classical references they follow to manufacture it, MRP (prices) and indications **2. Group 2-** Need to be assigned to collect varieties of parpati containing suvarna bhasma as one ingredient in it, their manufacturing companies, classical references they follow to manufacture it, MRP (prices) and indications **3. Group 3-** Need to be assigned to collect varieties of kupipakwa rasayanas containing suvarna bhasma as one ingredient in it,	4

		manufacturing companies, classical references they follow to manufacture it, MRP (prices) and indications **4. Group 4 -** Need to be assigned to collect varieties of pottali rasayanas containing suvarna bhasma as one ingredient in it, manufacturing companies, classical references they follow to manufacture it, MRP (prices) and indications **5. Group 5 -** Need to be assigned to collect varieties of kharaliya rasayanas containing suvarna bhasma as one ingredient in it, manufacturing companies, classical references they follow to manufacture it, MRP (prices) and indications 6.The mentioned activity is an example. Every year different formulations/ activity need to be given. **Discussion:** All groups have to present their assignment and finally in charge teacher has to give conclusion of importance of swarnakalpa. rationality behind following different references and probable variation in their cost.	
CO1	**Paper I- 13.Current and Emerging Trends in Ayurvedic pharmaceuticals**	**Objectives: -** • Identify the current and emerging trends in Ayurvedic Pharmaceuticals. • Analyze the potential impact of these trends on the future of Ayurvedic Pharmaceuticals. • Review and record the commonly used modified dosage forms of Ayurvedic	4

		formulations. • Evaluate the potential of these modified dosage forms to improve the efficacy and safety of Ayurvedic formulations. **Method of Activity** Students need to be divided into 3 groups **Group 1**. List the current and emerging trends in Ayurvedic Pharmaceuticals viz. cosmetics, Neutraceuticals, Herbaceuticals **Group 2**. Review and record the commonly used modified dosage forms of Ayurvedic formulations **Group 3.** Generate a folder on computer about relevant research articles on modified Ayurvedic dosage forms **Discussion :** All the above groups will present their assignment with their team and Exchange of Knowledge will take place followed by conclusion by faculty in charge	
CO4	Paper I - 14. GMP & Drug and Cosmetic act 1940 and rules 1945	**Objective:** **After completing this activity, students will be able to:** • Identify misleading advertisements under the Drug & Magic Remedies objectionable advertisements Act, 1954. • Analyze misleading advertisements and identify the specific provisions of the Act that are being violated.	4

		• Communicate their findings in a clear and concise way. **Methodology: -** **Students are to be divided into 5 students in each group** 1.Each group need to report two misleading advertisements under Drug & Magic Remedies - objectionable advertisements Act, 1954 advertising through TV channels, print media or electronic media etc. 2.The students will ask to submit details of objectionable advertisements in the prescribed format. **Discussion: -** After the submission of reports, the students will be asked to present and an interaction will be held between students and the concerned teacher (s) to understand the act & rules of objectionable advertisements as a learning experience.	
CO1	Paper II -1. Aushadhi Prayoga Vigyana	**Objective:** **After completing this activity, students will be able to:** • Understand the concept of Prashasta Bheshaja lakshana. • Identify the different aspects of Prashasta Bheshaja lakshana, such as bahu kalpam, bahugunam, and sampannam.	2

		• Gather information about a given drug/formulation and justify whether it is a Prashasta Bheshaja. • Communicate their findings in a clear and concise way. **Method of Activity** Students will be divided in Groups consisting of 10 Students in each group each group will be given one drug/Formulation They have to search information about Prashasta bheshaja on following aspects- 1.Bahu Kalpam 2.Bahugunam 3.Sampannam justify that the drug which they are allotted drug/formulation Each team will present their Justification followed by conclusion by designated faculty.	
CO1,CO3	**Paper II- 2.Single drug (Herbal & Mineral)**	**Objective:** **After completing this activity, students will be able to demonstrate their knowledge of herbal and mineral drugs by:** • Identifying and differentiating between	2

		different types of herbal and mineral drugs, with at least 5 examples of each. • Understanding the different formulations of herbal and mineral drugs, with at least 3 examples of each formulation. • Learning about the different indications for herbal and mineral drugs, with at least 3 examples of each indication. • Learning about the different anupanas that can be used with herbal and mineral drugs, with at least 3 examples of each anupana. • Understanding the importance of pathyaapatya, sevana kala, and saveeryatavadhi in the administration of herbal and mineral drugs. • Communicating their findings in a clear and concise way, including a presentation to the class that is clear, concise, and answers questions about the drugs. **Method of Activity** 1. Students need to divided into groups as per convenience 2. Each group need to be assigned with one herbal or one mineral drug or from both categories 3. Advised to collect information on assigned single drug/drugs variety of formulations, different indications when given in different form, with different anupana, Pathyaapatya, sevana kala, saveeryatavadhi and research updates and clinical evidences for each of the formulations 4. Every year different drugs are to be allotted to avoid repetition.	

CO1,CO2,CO3	**Paper II -3.Single Drug (Bhasma, Shuudha & Pishti)- Mk**	**Objective** **After completing this activity, students will be able to demonstrate their knowledge of market research by:** • Conducting a market survey of one or two bhasmas in a particular city. • Collecting and documenting information about the market demand for the bhasma, such as the price, the dosage, and the frequency of use. • Analyzing the data collected to determine the market trends for the bhasma. • Communicating their findings in a clear and concise way, including a presentation to the class. **Method of Activity:** 1.The students instructed to visit Ayurvedic drug store and collect information as given in the format. 2.Students need to be divided into 4 to 5 groups. Each group need to be given 1 to 2 drugs. (Every year different drugs are to be allotted to avoid repetition.) 3.Each group has to visit one to two Ayurvedic drug stores. Number of stores can be increased based on number of drug stores in the city or around the city.(based on information of online survey) After collecting information students have to submit survey forms to department	6

CO1,CO2	Paper II- 4. Aushadhi Kalpa-I(Compound Formulations)	**Horizontal Integration Activity with Department of Agada Tantra** **Objective** **After completing this activity,** • Students will be able to demonstrate their knowledge of the preparation and uses of agadas by: • Preparing five different agadas under the guidance of Rasashastra & Bk Dept faculty.. • Presenting their findings on the ingredients, method of preparation, uses, dosage, anupana, and mode of action of the agadas. • Communicating the utility of the agadas in different conditions, research updates with case studies, and dosage, anupana, and duration of agada kalpa prayoga. **Method of Activity** **Students will be divided into 5 groups** Each group will get hands on training to prepare one peculiar agada (mentioned in following list) and faculty from Agada Tantra department will give information about its utility in different Visha Laxana/or Stages of visha dushta.All details about agada kalpa prayoga viz.Dosage, Anupana, Duration will be discussed -2hrs Team 1: Bilavdi Agada Team 2: Dooshivishari Agada Team 3: Dashanga Agada Team 4: Murvadi Agada Team 5: Pancha Shireesha Agada Presentation will be done by all Teams on	4

		Ingredients, Method of Preparation, Video/ Photos of ingredients, preparation, uses, dosage, Anupana Every year different topics are to be selected for integrated activity. Repetition should be avoided. Discussion will be done on mode of action, utility of above prepared Agadas in different conditions, Research updates with Case studies by Agada Tantra Faculty	
CO3	**Paper II - 5. Aushadhi Kalpa - II(Compound drugs/ formulations)**	**Objective** **After completing this activity, students will be able to:** • Identify the different types of research updates and clinical evidences that are available for the formulations listed in the syllabus Aushadhi Kalpa - II(Compound drugs/ formulations). • Collect and compile research updates and clinical evidences for the formulations assigned to them. • Review the research updates and clinical evidences to determine their relevance and significance. • Communicate their findings in a clear and concise way. **Methodology of Activity :** 1.Students are to be divided into 5 to 6 groups 2.Each group is to be assigned 2 to 3 formulations in the syllabus.	2

		3.Groups are instructed to collect Research updates and clinical evidences for formulations assigned to them 4. Every year different formulations are to be allotted to avoid repetition. **Submission of Assignment:** After the completion of compilation groups have to submit the assignment for correction.	
CO4	Paper II - 6 Dosage forms & cosmetic productsPaper II- 7. Nutraceuticals	**objective** **After completing this activity, students will be able to:** • Identify the different types of cosmetic and nutraceutical products. • Understand the legal and regulatory requirements for these products. • Research the market for these products. • Analyze the quality control tests that are recommended for these products. • Prepare a report/assignment on the selected products. • Communicate their findings in a clear and concise way. • Answer questions about their findings. • Communicate the significance of various guidelines used for testing of food products and cosmetics in brief.	3

Methodology: -

1. Students are to be divided into 5-6 groups

2. Each group need to be given one to two cosmetic or nutraceutical products for eg. Lipstick, lip balm, Energy drink, Nutritional supplement for children, working women, pregnant women etc.

3.The students will be asked to prepare a report/assignment on number of companies selling such products. Information should be compiled about their major ingredients, preservatives, price, market value, quality control tests recommended etc.

4. For that Nutritional Product, the students will be asked to go through the quality parameters and nutritional values displayed on packages of food products as per the guidelines of Food Safety and Standards Authority of India (FSSAI).

5. Every year different products are to be allotted to avoid repetition

Discussion: - After the submission of reports, a discussion will be held among the students and the teacher(s) to understand the significance of various guidelines used for testing of food products and cosmetics in brief.

Optional Activity

Objectives-

after completion of the course students should be able to prepare dosage forms and self care products in the syllabus.

Short term course/ Module

		Online/offline mode in collaboration with Pharmacy college Dosage Forms & Self-care Products Assessment through MCQ's Duration of the course may be 22hrs including online assessment	
CO1,CO3,CO6	Paper II- 8 Anupana Prayoga for Aushadhi KalpaPaper II- 9. Aushadhi Prayoga Marga	**Objective** **After the completion of this activity** • Students should be able to explain/present the probable pharmacokinetic and pharmacodynamic principles of assigned Ayurvedic drugs & Anupana in different condition or indication **Method of Activity: -** 1.Students will be divided into 5 to 6 groups 2.Each group need to be allotted formulations/ single drug/Bhasma/Pishti etc 3.Students are asked to explain the therapeutic importance of five formulations with respect to different Anupana, Aushadhiprayoga marga and their utility in different disorders with the probable pharmacokinetic and pharmacodynamic principles involved in the use of assigned Ayurvedic drugs. 4. students have to submit assignment / sharing ppt presentation in the activity group **Discussion: -** After the completion of this task, students should be able to explain/present the probable pharmacokinetic and pharmacodynamic principles of assigned Ayurvedic drugs. In charge teacher has to conclude on collection of compiled matter and drugs action.	2

CO3	Paper II 10. Rational prescription along with safe dispensing of Ayutrvedic formulations.	**Objective** **After completing this activity, students will be able to:** • Identify the different components of a prescription. • Analyse the prescriptions to determine whether they are rational. • Discuss the significance of ideal prescription and rationality of use of drugs in Ayurveda. **Methodology: -** 1.Students are to be divided into 4 to 5 groups 2.Each group is advised to collect 4 to 5 prescriptions from different departments of the hospital. 3.The students are asked to visit hospital to go through the randomly selected five prescriptions for promoting them to know the ideal prescription and rational use of drugs. 4.The students will be asked to present their review of this activity during the non-lecture hours. 5.Strictly instructions should be given to maintain confidentiality about patient's name and consultant's name. **Discussion: -** After the completion of the task, an interaction will be held among the students and the concerned teacher (s) to understand the	4

		significance of ideal prescription and rationality of use of drugs in Ayurvedic practices.	
CO1,CO5	Paper II 11. Traditional and local health practices	**Objective** **After completing this activity, students will be able to:** • Identify different types of traditional healers in their local area/region. • Interview traditional healers to understand their practices. • Document the practices of traditional healers in a way that is respectful and preserves their knowledge. • Communicate the findings of their research to others. **Methodology :** 1. To understand the practices of traditional healers/ Folklore healers- the students are instructed to visit and meet some of the folk healers / traditional healers who have been practicing since ages in their local area/region. During their holiday/vacation students can complete this survey in and around the institute or near their residential place. 2. The students may act as a bridge between Ayurveda and traditional/local healers by making them understand the beneficial effect of technology and how this can help the healers to expand their treatment to a larger mass. Because many a times it has been observed that the healers are reluctant or they don't entertain the students who come to meet them for fear of exploitation or theft of their knowledge.	4

		3. By doing this practice, the healers will develop confidence on students which helps in collecting /documenting practices, through which a new horizon may open in the field of medicinal research. **Discussion:** After the completion of the visit, an interaction need to be held among the concerned teachers and students to discuss the learning experiences, and try to find out difficulties so that in future those things can be managed or avoided to make things easier.	
CO4	Paper II 12. Pharmacovigilance for Ayurveda drugs	**Objective** **After completing this activity, students will be able to:** • Identify the different types of adverse drug reactions (ADRs). • Describe the detection criteria for ADRs. • Explain the assessment techniques for ADRs. • Discuss the prevention criteria for ADRs. • Able to fill out an ADR reporting format **Methodology: -** The students will be asked to visit hospital or go through the previously reported cases to discuss for detection criteria, assessment techniques, understanding and prevention criteria of ADRs. Every student is assigned to fill up the ADR reporting format by allotting imaginary situation/ real case	4

		Discussion: - After the visit, an interaction will be held among the concerned teacher(s) and the students to discuss the learning experiences, and the importance of ADRs, their assessment and reporting techniques.	

Hours indicated are included in calculations of Table 3 and 4

Table 5- Teaching learning method

Sr No	Teaching learning methods in the course	No of Activities
1	Lecture	15
2	Lecture with Power point presentation	82
3	Lecture & Group Discussion	25
4	Lecture with Video clips	14
5	Discussions	46
6	Brainstorming	29
7	Inquiry-Based Learning	25
8	PBL	1
9	CBL	1
10	Project-Based Learning	15
11	Team project work	12
12	Blended Learning	1
13	Edutainment	1
14	Mobile learning	2
15	Self-directed learning	23
16	Problem solving method	2
17	Workshops	1
18	Game-Based Learning	2
19	Demo on Model	2
20	Library Session	7

21	Peer learning	1
22	Real life experience	5
23	Recitation	2
24	Symposium	1
25	Tutorial	2
26	Presentations	2
27	Practical	7
28	Drug analysis	1
29	Demonstration	2
30	Demonstration Lab	4
31	Field visit	2

These are overall teaching learning methods listed in Table 3 and 4. Teachers can select the best possible method amongst the given methods as per objective, available time etc.

Table 6: Assessment Summary: Assessment is subdivided in A to H points

6 A-Number of Papers and Marks Distribution

Subject Code	Papers	Theory	Practical/Clinical Assessment					Grand Total
			Practical	Viva	Elective	IA	Sub Total	
AyUG-RB	2	200	100	70	-	30	200	400

6 B - Scheme of Assessment (formative and Summative)

PROFESSIONAL COURSE	DURATION OF PROFESSIONAL COURSE		
	First Term (1-6 Months)	Second Term (7-12 Months)	Third Term (13-18 Months)
Second	3 PA & First TT	3 PA & Second TT	3 PA & UE **

PA: Periodical Assessment; **TT:** Term Test; **UE:** University Examinations.

** University Examination shall be on entire syllabus

6 C - Calculation Method for Internal assessment Marks

TERM	PERIODICAL ASSESSMENT*					TERM TEST**	TERM ASSESSMENT	
	A 2	B	C	D	E	F	G	H
	1 (15 Marks)	2 (15 Marks)	3 (15 Marks)	Average (A+B+C/ 3)	Converted to 30 Marks (D/15*30)	Term Test (Marks converted to 30)	Sub Total _/60 Marks	Term Ass essment (…./30)
FIRST							E+F	(E+F)/2
SECOND							E+F	(E+F)/2
THIRD						NIL		E
Final IA	Average of Three Term Assessment Marks as Shown in 'H' Column.							
	Maximum Marks in Parentheses *Select an Evaluation Method which is appropriate for the objectives of Topics from the Table 6 D for Periodic assessment. Conduct 15 marks assessment and enter marks in A, B, and C. ** Conduct Theory (100 Marks)(MCQ(20*1 Marks), SAQ(8*5), LAQ(4*10)) and Practical (100 Marks) Then convert to 30 marks.							

6 D - Evaluation Methods for Periodical Assessment

S. No	Evaluation Methods
1	Activities Indicated in Table 3 - Column G3 as per Indicated I, II or III term in column I3

Evaluation Methods in MSE

1. Practical / Clinical Performance
2. Viva Voce, MCQs, MEQ (Modified Essay Questions/Structured Questions)
3. Open Book Test (Problem Based)
4. Summary Writing (Research Papers/ Samhitas)
5. Class Presentations; Work Book Maintenance
6. Problem Based Assignment
7. Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OPSE), Mini Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedures (DOP), Case Based Discussion (CBD)
8. Extra-curricular Activities, (Social Work, Public Awareness, Surveillance Activities, Sports or Other Activities which may be decided by the department).
9. Small Project etc.

6 E Question Paper Pattern

II PROFESSIONAL BAMS EXAMINATIONS
AyUG-RB
PAPER-1
Time: 3 Hours Maximum Marks: 100
INSTRUCTIONS: All questions compulsory

		Number of Questions	Marks per question	Total Marks
Q 1	MULTIPLE CHOICE QUESTIONS (MCQ)	20	1	20
Q 2	SHORT ANSWER QUESTIONS (SAQ)	8	5	40
Q 3	LONG ANSWER QUESTIONS (LAQ)	4	10	40
				100

Similar for Paper II

6 F Distribution of theory examination

Paper 1 Ayurvediya Aushadhi Nirmana Vigyana						
Sr. No	**A List of Topics**	**B Term**	**C Marks**	**MCQ (1 Mark)**	**SAQ (5 Marks)**	**LAQ (10 Marks)**
1	**1.Chronological development of Ayurvediya Aushadhi Nirmana**	1	05	No	Yes	No
2	**2.Paribhasha (Terminology)**	1	10	Yes	Yes	No
3	**3.Adharbhuta Siddhanta (Application of fundamental principles)**	1	05	Yes	Yes	No
4	**4.Yantropakaranani- I (Equipments and machineries)**	1	05	Yes	Yes	No
5	**5.Yantropakaranani -II (Equipments, fuel and Heating Devices)**	1	05	Yes	Yes	No
6	**6.Kalpana Nirmana I (Primary & Secondary dosage forms)**	1	10	Yes	Yes	Yes
7	**7.Kalpana Nirmana-II (Method of Preparation of different dosage forms& Dietary Supplements))**	1	10	Yes	Yes	Yes
8	**8.Rasa Dravya Parichaya- I**	2	10	Yes	Yes	Yes
9	**9.Rasa Dravya Parichaya II**	2	5	Yes	Yes	No
10	**10.Rasadravya Parichaya III**	2	5	Yes	No	No
11	**11.Kalpana Nirman -III (Method of Preparation of different dosage forms)**	2	10	Yes	Yes	Yes
12	**12.Chaturvidha Rasayana**	2	10	Yes	Yes	Yes
13	**13.Current and emerging trend in Ayurvedic pharmaceuticals**	3	5	No	Yes	No

14	**14.GMP(Schedule T) & Regulatory aspects of Ayurvedic drugs**	3	5	Yes	Yes	No
Total Marks			**100**			

Paper 2 Ayurvediya Aushadhi Prayoga Vigyana						
Sr. No	**A List of Topics**	**B Term**	**C Marks**	**MCQ (1 Mark)**	**SAQ (5 Marks)**	**LAQ (10 Marks)**
15	**1.Aushadhi Prayoga Vigyana**	1	5	Yes	Yes	No
16	**2.Single drug (Herbal & Mineral)**	1	10	Yes	Yes	Yes
17	**3.Single drug(Bhasma, Shuddha & Pishti)**	2	15	Yes	Yes	Yes
18	**4.Aushadhi Kalpa -I (Compound formulations)**	2	15	Yes	Yes	Yes
19	**5.Aushadhi Kalpa-II (Compound Drugs/Formulations)**	3	15	Yes	Yes	Yes
20	**6.Dosage Forms & Cosmetic Products**	3	5	Yes	Yes	No
21	**7.Nutraceuticals**	3	5	Yes	Yes	No
22	**8.Anupana Prayoga for Aushadhi Kalpa**	3	5	Yes	Yes	No
23	**9.Aushadhi Prayoga Marga**	3	10	Yes	Yes	Yes
24	**10.Rational prescription along with safe dispensing of Ayurvedic formulations.**	3	5	No	Yes	No
25	**11.Traditional & Local health Practices**	3	5	No	Yes	No
26	**12.Pharmacovigilance for Ayurveda drugs**	3	5	Yes	Yes	No
Total Marks			**100**			

6 G Blue print of paper I & II

Paper No:1		
Question No	**Type of Question**	**Question Paper Format**
Q1	**Multiple choice Questions** **20 Questions** **1 mark each** **All compulsory** **Must know part - 15 MCQ** **Desirable to know - 3 MCQ** **Nice to know part - 2 MCQ**	**1.** 2.Paribhasha (Terminology) **2.** 2.Paribhasha (Terminology) **3.** 2.Paribhasha (Terminology) **4.** 4.Yantropakaranani- I (Equipments and machineries) **5.** 5.Yantropakaranani -II (Equipments, fuel and Heating Devices) **6.** 6.Kalpana Nirmana I (Primary & Secondary dosage forms) **7.** 6.Kalpana Nirmana I (Primary & Secondary dosage forms) **8.** 6.Kalpana Nirmana I (Primary & Secondary dosage forms) **9.** 7.Kalpana Nirmana-II (Method of Preparation of different dosage forms& Dietary Supplements)) **10.** 7.Kalpana Nirmana-II (Method of Preparation of different dosage forms& Dietary Supplements)) **11.** 8.Rasa Dravya Parichaya- I **12.** 8.Rasa Dravya Parichaya- I **13.** 8.Rasa Dravya Parichaya- I **14.** 8.Rasa Dravya Parichaya- I **15.** 9.Rasa Dravya Parichaya II **16.** 10.Rasadravya Parichaya III **17.** 11.Kalpana Nirman -III (Method of Preparation of different dosage forms) **18.** 12.Chaturvidha Rasayana **19.** 12.Chaturvidha Rasayana **20.** 14.GMP(Schedule T) & Regulatory aspects of Ayurvedic drugs
Q2	**Short answer Questions** **Eight Questions** **5 Marks Each** **All compulsory** **Must know - 7 SAQ** **Desirable to know - 1 SAQ** **No questions on Nice to know**	**1.** 1.Chronological development of Ayurvediya Aushadhi Nirmana **2.** 3.Adharbhuta Siddhanta (Application of fundamental principles) / 2.Paribhasha (Terminology) **3.** 9.Rasa Dravya Parichaya II / 4.Yantropakaranani- I (Equipments and machineries) / 5.Yantropakaranani -II (Equipments, fuel and Heating Devices) **4.** 6.Kalpana Nirmana I (Primary & Secondary dosage forms) **5.** 7.Kalpana Nirmana-II (Method of Preparation

		of different dosage forms& Dietary Supplements)) 6. 9.Rasa Dravya Parichaya II / 8.Rasa Dravya Parichaya- I 7. 12.Chaturvidha Rasayana 8. 14.GMP(Schedule T) & Regulatory aspects of Ayurvedic drugs / 13.Current and emerging trend in Ayurvedic pharmaceuticals
Q3	**Long answer Questions** **Four Questions** **10 marks each** **All compulsory** **All questions on must know. No Questions on Nice to know and Desirable to know**	1. 6.Kalpana Nirmana I (Primary & Secondary dosage forms) 2. 7.Kalpana Nirmana-II (Method of Preparation of different dosage forms& Dietary Supplements)) 3. 8.Rasa Dravya Parichaya- I 4. 11.Kalpana Nirman -III (Method of Preparation of different dosage forms) / 12.Chaturvidha Rasayana
Paper No:2		
Question No	**Type of Question**	**Question Paper Format**
Q1	**Multiple choice Questions** **20 Questions** **1 mark each** **All compulsory** **Must know part - 15 MCQ** **Desirable to know - 3 MCQ** **Nice to know part - 2 MCQ**	1. 1.Aushadhi Prayoga Vigyana 2. 2.Single drug (Herbal & Mineral) 3. 2.Single drug (Herbal & Mineral) 4. 3.Single drug(Bhasma, Shuddha & Pishti) 5. 3.Single drug(Bhasma, Shuddha & Pishti) 6. 3.Single drug(Bhasma, Shuddha & Pishti) 7. 3.Single drug(Bhasma, Shuddha & Pishti) 8. 4.Aushadhi Kalpa -I (Compound formulations) 9. 4.Aushadhi Kalpa -I (Compound formulations) 10. 4.Aushadhi Kalpa -I (Compound formulations) 11. 4.Aushadhi Kalpa -I (Compound formulations) 12. 5.Aushadhi Kalpa-II (Compound Drugs/Formulations) 13. 5.Aushadhi Kalpa-II (Compound Drugs/Formulations) 14. 5.Aushadhi Kalpa-II (Compound Drugs/Formulations) 15. 5.Aushadhi Kalpa-II (Compound Drugs/Formulations) 16. 6.Dosage Forms & Cosmetic Products

		17. 7.Nutraceuticals **18.** 8.Anupana Prayoga for Aushadhi Kalpa **19.** 9.Aushadhi Prayoga Marga **20.** 12.Pharmacovigilance for Ayurveda drugs
Q2	**Short answer Questions** **Eight Questions** **5 Marks Each** **All compulsory** **Must know - 7 SAQ** **Desirable to know - 1 SAQ** **No questions on Nice to know**	**1.** 8.Anupana Prayoga for Aushadhi Kalpa / 1.Aushadhi Prayoga Vigyana **2.** 2.Single drug (Herbal & Mineral) **3.** 3.Single drug(Bhasma, Shuddha & Pishti) **4.** 4.Aushadhi Kalpa -I (Compound formulations) **5.** 5.Aushadhi Kalpa-II (Compound Drugs/Formulations) **6.** 7.Nutraceuticals **7.** 9.Aushadhi Prayoga Marga **8.** 12.Pharmacovigilance for Ayurveda drugs / 10.Rational prescription along with safe dispensing of Ayurvedic formulations. / 6.Dosage Forms & Cosmetic Products / 11.Traditional & Local health Practices
Q3	**Long answer Questions** **Four Questions** **10 marks each** **All compulsory** **All questions on must know. No Questions on Nice to know and Desirable to know**	**1.** 2.Single drug (Herbal & Mineral) / 9.Aushadhi Prayoga Marga **2.** 3.Single drug(Bhasma, Shuddha & Pishti) **3.** 4.Aushadhi Kalpa -I (Compound formulations) **4.** 5.Aushadhi Kalpa-II (Compound Drugs/Formulations)

6 H Distribution of Practical Exam

S.No	Heads	Marks
1	**1.Spotting (10 sample + 5 Instruments/ equipments)** **Identification (1 mark) answering sub question related to spotter(1 mark) 15x2=30 marks Choose spotter from below mentioned list** 1. Parada (mercury), 2. Abhraka (Biotite Mica), 3. Makshika (Chalco-pyrite), 4. Shilajatu(Asphaltum Punjabianum) 5. Gandhaka (Sulfur) 6. Gairika(Red Ochre) 7. Kankshi (Alum) 8. Haratala (Orpiment) 9. Manahshila (Realgar) 10. Kampillaka(Mallotus Philippinensis) 11. Navasadara (Ammonium chloride) 12. Hingula (Red Cinnabar) 13. Tamra (Copper) 14. Loha (Iron) 15. Mandur (rust iron) 16. Vanga (Tin) 17. Naga (Lead) 18. Yashada (Zinc) 19. Pravala (Coral) 20. Kaparda (Cowries) 21. Shukti (Oyster Shell) 22. Shankh (Conch Shell) 23. Godanti (Gypsum) 24. Samudraphena (Cattle Fish bone) 25. Kukkutanda twak (Hen's EggShell), 26. Tankana kshara (Borax) 27. Sasyaka (Peacock ore) 28. Kasisa (Green Vitriol), 29. Gauri pashana (Arsenic oxide) 30. Akika(Agate), 31. Sudha (Lime stone) 32. Khatika 33. Dugdhapashana (Talc) 34. Vimala 35. Rasaka 36. Yantra	30

	37. Dola Yantra 38. DamaruYantra 39. Valuka Yantra 40. Puta Yantra 41. Khalwa Yantra 42. Patana Yantra 43. Darvika Yantra 44. Ulukhala Yantra 45. Patala Yantra 46. Kupi Yantra 47. Arkapatana Yantra 48. Pithara Yantra 49. Sharava Yantra 50. Palika Yantra 51. Sthali Yantra 52. Swedana Yantra 53. Moh's scale 54. Tablet Hardness tester 55. Ph Meter 56. Muffle Furnace 57. Electronic Weighing machine 58. Pycnometer 59. Large scale manufacturing instruments & equipments in the syllabus Photos /Pictures may be used for spotting	
2	**2. Long Practical** • Selection of Ingredients with proportion(10Marks) • Preparation following SOP (15 marks) • Demonstration of Siddhi lakshana(05Marks) • on site viva (10 Marks) **List of Long Practicals** 1. Sitopaladi churna 2. Hingwastaka Churn 3. Agni Tundi Vati 4. Chitrakadi Vati 5. Lavangadi Vati 6. Triphala Guggulu 7. Kaishor Guggulu 8. Phala Varti 9. Chandrodaya Varti	40

	10. Arka Lavana 11. Narikela Lavana 12. Atasi Upanaha 13. Dashanasamskara churna 14. Gandhaka Malahara 15. Dashanga Lepa 16. Mustadi Pramathya 17. Shadanga Paneeya 18. Kharjuradi Mantha 19. Chincha Panaka 20. Chandana Panaka 21. Ghrita Murchana 22. Taila Murchana 23. Triphala Ghrita 24. Amruta Ghrita 25. Ksheera Bala Taila 26. Arka Taila 27. Vasavaleha 28. Nimbu Sharkara 29. Kutaja Ghana 30. Guduchi Ghana 31. Haridra Khanda 32. Narikela Khanda 33. Ananda Bhairava Rasa 34. Tribhuvana Keerti rasa 35. Rasa Parpati 36. Sweta Parpati 37. Laghusutsekhararasa 38. Navayasa loha 39. Saptamrita loha **Note: for preparation shuddha dravya, decoction,murchita gritha, murchita taila etc are to be provided for long practical**	
3	**3.Short Practical** • **Selection of Ingredients with proportion(5Marks)** • **Preparation following SOP (5 marks)** • **Demonstration of Siddhi lakshana(5Marks)** • **on site viva (5 Marks)** **List of Short Practicals** 1. Godanti Shodhana 2. Shankha Shodhana	20

	3. Kapardika shodhana 4. Guggulu Shodhana 5. Gandhaka Shodhana 6. Vanga Shodhana 7. Yashada shodhana 8. Abhraka Shodhana 9. Tamra Shodhana 10. Tankana Shodhana 11. Kankshi shodhana 12. Hingula Shodhana 13. Gairika Shodhana 14. Hingu Shodhana 15. Mugdha Rasa 16. Tamra Bhasma (Dadhi/ Nimbu Pariksha) 17. Triphala Masi 18. Mayura Piccha Masi 19. Vasaputapaka Swarasa 20. Amruta Satva 21. Arjuna Ksheera Paka 22. Lashuna Ksheerapaka 23. Punarnavashtaka kwatha 24. Rasna Saptaka Kwatha 25. Specific Gravity 26. Refractive Index 27. PH	
4	4.Practical Record Four Record books- for each record book 2.5 Marks	10
5	**5.Viva-Voce** **Structure of Viva** 1. Paribhasha – (2 questions 3 marks each) - 6 Marks 2. Shodhana, marana –(1 question from each 5 marks each) -10 Marks 3. Yantropakarana -–(2questions 3 marks each) - 6 Marks 4. Chemical composition Raasadravya -–(1 questions 2 marks each)-2 Marks 5. Therapeutic application of single drugs – (2 question 3 marks each) -6 marks 6. Yoga - (Shloka-3 marks; ingredients-5 marks: indications -5 marks	70

	dose & anupana-2Marks)-15Marks (Select the yoga having at least 5 ingredients) 7. Siddhi lakshana & quality control tests –(2 questions 5 marks each)-10 Marks 8. D& C act, GMP, FSSAI- 2 Marks 9. Viva on Non Lecture hour activity book-8 Marks 10. Communication skills -5 Marks	
6	**6. Internal assessment**	30
Total Marks		**200**

References Books/ Resources

S.No	Book	Resources
1	1. Adyatan Rasa Shastra	R.K. Goyal Chaukhamba Surbharati Prakashan, Varanasi
2	2.Ayurvediya Aushadhi gunadharma shastra	Vol I, II, III, IV, V, Gune Gangadharashastri, Gune Bandhu Prakashan
3	3. Asava Arishta Vigyanam	Dr. Pakshdhar Jha, Chaukhambha Sanskrit Sansthan, Varanasi
4	4. Ayurvediya Rasa Shastra	(Sachitra) Chandrabhusan Jha by Chaukhamba Surbharati Prakashan Varanasi, Reprint 2012
5	5.Ayurvediya Rasa Shastra	Prof. Siddhi Nandan Mishra, Chaukhamba Orientalia, Varanasi
6	6.Ayurved Prakash	Vaidya Gulraj Mishra. Chaukhambha Bharati Academy, Varanasi
7	7.Drugs and Cosmetic Act - 1940	Vijay Malik, Eastern Book Company Delhi
8	8. Pratyaksha Aushadh Nirmanam	Acharya Vishwanath Dwivedi
9	9.Rasa Tarangini	Sadanand Sharma,Motilal Banarasidas, Varanasi
10	10.Rasa Bhaishajya Kalpana Vigyan	Vaidya Santosh Kumar Khandal, Choukhamba Publishers, New Delhi
11	11.Rasa Ratna Samuchchaya (Hindi)	Dattattreya Ananta Kulkarni, Meharchand Lachamdas Publications,New Delhi
12	12.Rasendra Sara Sangraha	Vaidya Gopal Krishna, Chaukhambha Sanskrit Series of Varanasi
13	13.Ayurvediya Paribhasha	Indradev Tripathi Chaukhamba Orientalia, Varanasi
14	14.Sharangadhara Samhita	Radhakrishna Parashar Vaidyanath Ayurved Bhavan Pvt
15	15.Bharatiya Bhaishajya Kalpana Vigyana	Gananath Vishwanath Dwivedi Krishnadas Academy, Varanasi
16	16.Ayurvedic formulary of India	Govt. of India Ministry of Health & Family welfare New Delhi
17	17.Ayurvedic Pharmacopiea of India	CCRAS Govt. of India Ministry of Health & Family welfare New Delhi
18	18.Abhinava Bhaishajya Kalpana	Siddhi Nandan Mishra, Chaukhamba Surbharati Prakasha , Varanasi
19	19.Bhaishjya Ratnawali	Prof S N Mishra Choukhamba Publishers, Varanasi
20	20.Ayurvediya Rasashastra Ka Udbhava Evam Vikas	Satyendrakumar Arya, Krishnadas Academy, 1984

21	21.Yoga Ratnakar	Shri Laxmipathi Shastri, Chaukhambha Prakashana Varanasi, Reprint 2018
22	22.A Text book of Rasashastra	Prof. Parimi Suresh Chaukhambha Prakashak, Varanasi
23	23.Siddhoushadi Sangraha	Vaidyaratna G. A. Phadke, Ayurvedacharya, Satara, N. H Kolhatkar, Maharashtra mitra Mudranalaya, Shukravara peth, Satara
24	24.Application on standardised Namburi phased spot test in identification of Bhasma and Sindura preparations of Ayurveda published	Namburi Hanumantha Rao, CCRAS., New Delhi
25	25. Evidence based safety of Ayurvedic herbo-mineral formulations	Kumar Anhimanyu published by CCRAS, New Delhi
26	26. Introduction to Ayurvedic Pharmaceutics	Dr Devendra Joshi & Dr Geeta Joshi Chaukhambha Orientalia
27	27. A Handbook of Cosmetics	B. M. Mithal & R.N. Saha Published by Delhi Vallabh Prakashana
28	28. Sahasrayoga (Sanskrit and Hindi)	Reprint by CCRAS, New Delhi
29	29. Manual on Quality Parameters for Ayurveda & Siddha drugs	CCRAS, New Delhi
30	30.Safety and Prescription Trends of Rasaushadhis	Critical appraisal of Reported Medical Practices of Ayurveda Herbomineral formulations from CCRAS experience.
31	31. General Guidelines for Drug Development of Ayurvedic Formulations	CCRAS New Delhi, Volume I 1st Edn. 2018
32	32. General Guidelines for Safety/Toxicity Evaluation of Ayurvedic Formulations	CCRAS New Delhi, Volume II 1st Edn. 2018
33	33.General Guidelines for Clinical Evaluation of Ayurvedic Interventions	CCRAS New Delhi, Volume III 1st Edn. 2018
34	34. WHO internationalstandard terminologies on Ayurveda	WHO International Standard Terminology on Ayurveda, WHO 2022
35	35,Inorganic Pharmaceutical Chemistry	Gundu Rao P, Vallabha Prakashana
36	36, Organic Pharmaceutical Chemistry	Singh Harkishan;Kapoor V K, Vallabha Prakashana

37	37 Shlokavali of Rasashastra Bhaishajya Kalpana	Ninad Sathye;Shivaji Wavhal, Shantanu Prakashan Pune, 2009
38	38. Ansel"s Pharmaceutical Dosage Forms and Drug Delivery Systems	Loyd V Allen : Others, 9th volume, Lippincott Williams & Willkins Wolters Kluwer Co.2011
39	39. Laboratory Guide for the Analysis of Ayurveda and Siddha Formulations	Lavekar G S,Central Council For Research in Ayurveda & Siddha,2010
40	40. Pharmaceutics I & II	Mehta R M, Vallabha Prakashana, 2014
41	41.Central Drugs Standard Control Organization Directorate General of Health Services Ministry of Health & Family Welfare Government of India	https://cdsco.gov.in/opencms/opencms/en/Home/
42	42. FSSAI official website	https://www.fssai.gov.in/
43	43.PHARMACOPOEIA COMMISSION FOR INDIAN MEDICINE & HOMOEOPATHY OFFICIAL WEBSITE	https://pcimh.gov.in/

Assessment

S.No	Short form	Discription
1	T-EMI	Theory extended matching item
2	T- EW	Theory Essay writing
3	T- MEQs	Theory MEQs
4	T-CRQs	Theory CRQs
5	T-CS	Theory case study
6	T-OBT	Theory open book test
7	P-VIVA	Practical Viva
8	P-REC	Practical Recitation
9	P-EXAM	Practical exam
10	PRN	Presentation
11	P-PRF	Practical Performance
12	P-SUR	Practical Survey
13	P-EN	Practical enact
14	P-RP	Practical Role play
15	P-MOD	Practical Model
16	P-POS	Practical Poster
17	P-CASE	Practical Case taking
18	P-ID	Practical identification
19	P-PS	Practical Problem solving
20	QZ	Quiz
21	PUZ	Puzzles
22	CL-PR	Class Presentation,
23	DEB	Debate
24	WP	Word puzzle
25	O-QZ	Online quiz

26	O-GAME	Online game-based assessment
27	M-MOD	Making of Model
28	M-CHT	Making of Charts
29	M-POS	Making of Posters
30	C-INT	Conducting interview
31	INT	Interactions
32	CR-RED	Critical reading papers
33	CR-W	Creativity Writing
34	C-VC	Clinical video cases,
35	SP	Simulated patients
36	PM	Patient management problems
37	CHK	Checklists
38	OSCE	OSCE
39	OSPE	OSPE,
40	Mini-CEX	Mini-CEX
41	DOPS	DOPS
42	CWS	CWS
43	RS	Rating scales
44	RK	Record keeping
45	COM	Compilations
46	Portfolios	Portfolios
47	Log book	Log book
48	TR	Trainers report
49	SA	Self-assessment
50	PA	Peer assessment
51	360D	360-degree evaluation
52	TT-Theory	Theory
53	PP-Practical	Practical
54	VV-Viva	Viva

Domain

S.No	Short form	Discription
1	CK	Cognitive/Knowledge
2	CC	Cognitive/Comprehension
3	CAP	Cognitive/Application
4	CAN	Cognitive/Analysis
5	CS	Cognitive/Synthesis
6	CE	Cognitive/Evaluation
7	PSY-SET	Psychomotor/Set
8	PSY-GUD	Psychomotor/Guided response
9	PSY-MEC	Psychomotor/Mechanism
10	PSY-ADT	Psychomotor Adaptation
11	PSY-ORG	Psychomotor/Origination
12	AFT-REC	Affective/ Receiving
13	AFT-RES	Affective/Responding
14	AFT-VAL	Affective/Valuing
15	AFT-SET	Affective/Organization
16	AFT-CHR	Affective/ characterization

T L method

S.No	Short form	Discription
1	L	Lecture
2	L&PPT	Lecture with Power point presentation
3	L&GD	Lecture & Group Discussion
4	L_VC	Lecture with Video clips
5	DIS	Discussions
6	BS	Brainstorming
7	IBL	Inquiry-Based Learning
8	PBL	PBL
9	CBL	CBL
10	PrBL	Project-Based Learning
11	TBL	TBL
12	TPW	Team project work
13	FC	Flipped classroom
14	BL	Blended Learning
15	EDU	Edutainment
16	ML	Mobile learning
17	ECE	ECE
18	SIM	Simulation
19	RP	Role plays
20	SDL	Self-directed learning
21	PSM	Problem solving method
22	KL	Kinesthetic Learning
23	W	Workshops
24	GBL	Game-Based Learning
25	D-M	Demo on Model

26	LS	Library Session
27	PL	Peer learning
28	RLE	Real life experience
29	REC	Recitation
30	SY	Symposium
31	TUT	Tutorial
32	PER	Presentations
33	PT	Practical
34	XRay	X ray identification
35	CD	Case diagnosis
36	LRI	Lab report interpretation
37	DA	Drug analysis
38	D	Demonstration
39	D_BED	Demonstration bedside
40	D_L	Demonstration Lab
41	DG	Demonstration Garden
42	FV	Field visit
43	PRA	Practical