I. Basic Principles of Rasashastra and Bhaishajya kalpana

1. Basic concept of Rasashastra (Adharabhuta Siddhanta) and concept of Rasachikitsa.
2. History and Chronological evolution of Rasa sashtra, Concept of Raseshwara darshana.
3. Detailed knowledge of ancient and contemporary instruments and their modification used in manufacturing of Rasaushadies in small scale and large scale along with their applications.
4. Study of samskara, role of agni(heat), jala(water) and other dravas(liquids), kala (season), Patra(container) etc and their significance.
7. Detailed knowledge of satwa and druti.
8. Concept of Pratinidhi (substitute) dravya and discussion on controversial drugs.
9. History and chronological evaluation of bhaishajya kalpana, concept of bhesha and aushada, fundamental principles of bhaishajya kalpana. Technical terminologies (paribhasha) used in bhaishajya kalpana.
10. Classical and contemporary concept of collection, preservation, and storage of fresh and dry drugs.
11. Detailed knowledge of routes of drug administration, Posology, Anupana, Sahapana, Aushada Sevana Kala, Pathya and Apathya.

II. Understanding the Metals and Minerals used in Ayurveda.

1. Detailed ancient and contemporary knowledge of Parada (Mercury).
2. Detailed ancient and contemporary knowledge of Maharasa, Uparasa, Sadharana Rasa, Dhatu, Upadhatu, Ratna, Uparatna, Visha, Upavisha, Sudha Varga, Vavana Varga, Kshara Varga, Sikata Varga and other miscellaneous drugs used in Rasasashtra.

III. Basic concepts of Modern Metallurgy.
Geochemical /Mineralogical, biological identification, source, occurrence, physico-chemical characterization of various metal and minerals used in Ayurveda.

IV. Pharmacy Management

1. Scope and evolution of Pharmacy
2. Management of pharmacy, Storage and inventory management, Personnel management
3. Good manufacturing practices related to Ayurvedic drug industry
5. Packing material and labelling
6. Pharmaceutical marketing, product release and withdrawals
7. Patenting and Intellectual property rights.
8. Knowledge about good collection and storage practice (GCP and GSP) as per WHO and NMPB guidelines

V. Laws governing Ayurvedic drugs


ii. Laws pertaining to Drugs and magic remedies (Objectionable Advertisement) Act-1954.

iii. Prevention of Food Adulteration (PFA) Act.

iv. Food Standards and Safety Act-2006

v. Laws pertaining to Narcotics.

vi. Factory and Pharmacy Acts


viii. Knowledge of Good clinical practices and inspection manual prescribed by Dept. Of AYUSH, Govt. of India.

ix. Regulatory Affairs related to International trade and practices of Ayurvedic drugs.
x. Knowledge of regulations in relation to alcoholic drug preparations.

VI. Knowledge of different official databases.

Introduction to Ayurvedic pharmacopeia of India, Ayurvedic Formulary of India, Indian Pharmacopeia, British and United States Pharmacopeia, Pharmacopeial Codex, databases of medicinal plants published by CCRAS, ICMR and others and Traditional knowledge Digital library.

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I. Preclinical evaluation
   1. Experimental pharmacology [Bioassay, In-vitro, In-vivo, cell line studies], Animal ethics.
   2. Knowledge of toxicity and pharmacological activities of Herbo-mineral compounds

II. Clinical Pharmacology
   1. Evaluation of new chemical entity- Phases and methods of clinical research.
   2. Ethics involved in Human research.

III. Knowledge of Drug Analysis in herbal and herbo-mineral preparations.
   1. Introduction to advance instruments of analysis like XRD, XRF, SEM-E-Dax, FTIR and ICP analysis.
   2. Chromatography : TLC, Gas chromatography, Spectrometry and HPTLC.
   3. Concept of Nanotechnology and its relevance to preparation of medicines.
   4. Detailed knowledge of quality control and Pharmacopeial standards of
      a. Panchavidha kasaya kalpana, churna, avaleha kshirapaka, arka, satva, kshara, lavana, gutika, guggulu, and varti, etc…..
      b. Sneha kalpana
      c. Sandhana kalpana.
      d. Bahya prayogartha kalpana.
      e. Netrapacharartha kalpana.
   5. Detailed knowledge of quality control and pharmacopeial standards of
a. Bhasmas  
b. Pishti  
c. Kharaliya rasa  
d. Parpati  
e. Kupipakva rasa  
f. Pottali rasa  
g. Dravaka.

IV. General Pharmacology


2. Routes of drug administration.

3. Factors modifying drug effect, bioavailability and bioequivalence, drug interactions, adverse drug reaction and drug toxicity.

V. Introduction to Pharmaceutics

1. Detailed knowledge of manufacturing, development of innovative technology with standard operating procedures of processing and standardization of Bhasmas, Pishti, Kharaliya rasa, Parpati, Kupipakva rasa and Pottali rasa

2. Detailed knowledge of manufacturing, development of innovative technology with standard operating procedures of processing and standardization of following dosage forms.
   a. Panchavidha kasaya kalpana, churna, rasakriya, Ghana, avaleha, pramathya, mantha, panaka, sarkara, kshitrapaka, ushnodaka, aushadha siddha udaka, arka, satva, kshara, lavana, masi, gutika, vatika, modaka, gutika, vatika, modaka, guggulu, and varti, etc…..
   b. Sneha kalpana,
   c. Kritanna and Bheshaja siddha anna kalpana, Shuka and shimbi dhanya kalpana, dugdha, Dadhi and Takra Vikara and mansaradi rutanna kalpana, Aharopayogi varga , etc.
d. Sandhana kalpana: Madya varga and shukta varga

e. Bahya prayogartha kalpana: Lepa, Upanaha, Avaachurnana/ Avadhulana,

Abhyanga, Dhupana, Malahara.

f. Mukha, Karna, Nasa, Netrapacharartha kalpana.

g. Basti kalpana

h. Methods of Expression and Extraction: Maceration, Percolation, Distillation,

Infusion and  Decoction Knowledge about filtration techniques.

i. Drying open and closed air drying, freeze drying, vaccum drying and other
drying methods pharmaceutical excipients.

j. Liquids: Clarified liquid,Syrup,Elixir.

k. Solid dosage forms: Powders: Size reduction, Seperation techniques,particle size
determination, Principles of mixing.

l. Tablets: Methods of tableting, Suppositories, Pesssaries and Capsules, Sustainer
release dosage forms.

m. Semisolid dosage forms – Emulsions, Suspensions, Creams and
Ointments, Sterilization of Ophthalmic preparations.

n. Cosmetic preparations such as Toiletories, Shapoo, Shaving creams, Hair oils
Face powders (Talcum powders). Vanishing creams, Lotions and
Moisturisers, Face pack, Deodorents and Perfumes.

o. Concept of medicinal and functional food, Dietry supplements and neuctraceuticals

TEXT BOOKS/ REFERENCES:

1) Vaidya Lakshmipati Shastry , Yogaratnakara, vidyotini Hindi commentary , Chaukambha


3) Acharya Sharngadhara , Sharngadhara Samhita, Dipika Hindi Commentary by
6) Nagindas Chaganlal Shah, Bharat Bhaishajya Ratnakara, B. Jain publishers pvt.ltd, New Delhi, reprint 2005
9) Dr. Indradev Tripathy, Rasarnava, Rasachandrika Hindi commentary, Chaukambha Sanskrit Series Varanasi, Reprint 2012.
14) Neeraj Tandon & Poul Sharma, Quality and Standards of Medicinal plants, ICMR, Govt. of India, 2014.