5. RASA SHAstra AND BHAISHAjYA KALPANA

Paper I  Rasa Shastra

**Part A**


2. Detailed knowledge of ancient and contemporary Yantropakarana and their accessories used in aushadhikaran and their contemporary modification such as yantras, mushas, putas, Koshthis, bhrashtris, muffle furnaces and other heating appliances, ovens, driers etc. used in manufacturing of Rasaushadhis in small scale and large scale along with their applications.

3. Study of Samskara, Role of agni (Heat), jala and other dravas (water and other processing liquids), kala (Time span), paatra (container) etc. and their significance in aushadhikarana.

4. Concept of Bhavana, study of Mardana and its significance and knowledge of ancient and contemporary grinding techniques.


6. Detailed knowledge of Satva and Druti, Satva shodhan, mrudukaran and Maran of Satva, its significance, in relation to therapeutic efficacy of dravya under process.

7. Concept of Pratinidhi dravya and discussion on controversial drugs.

**PART – B**

1. Detailed ancient and contemporary knowledge of Parada and its compounds with reference to source, occurrence, physico-chemical characterization, graahya agraahyatva, Parada dosha, Parada gati, Parada shodhan, Study of Ashta sanskara, ashtadasha sanskara etc., Hingulottha Parada. Concept of Parada jaran, moorcchana, bandhan, pakshaccheda and marana etc. Therapeutic properties and uses of Parada.

2. Detailed ancient & contemporary knowledge with Geochemical / mineralogical / biological identification, source, occurrence, physico-chemical characterization, graahya-agraahyatva, Shodhan Maranadi vidhi and therapeutic properties and uses of dravyas etc. included in Maharasa, Uparasa, Sadharana rasas, Dhatu, Upadhatu, Ratna, Uparatna, Visha, Upavisha, Sudha varga, Lavana varga, Kshara varga, Sikata varga and other miscellaneous drugs used in Rasashastra.

3. Detailed knowledge of manufacturing, pharmacopeial standards, storage, shelf life, therapeutic efficacy, dose, anupana, vikarashanti upaya and development of technology with Standard Operating Procedures of processing, standardization, quality control of Bhasmas and Pishtis

Dravaka - Shankha Dravaka
Pishti - Praval pishti, Manikya Pishti, Mukta pishti, Jahara mohara pishti, Trinakanta mani pishti etc.

4. Detailed knowledge of manufacturing, storage, shelf life, pharmacopeial standards, therapeutic efficacy, dose, anupana and development of technology with Standard Operating Procedures of processing, standardization and quality control of Kharaliya rasa, Parpati, Kupipakva rasa and Pottali rasa.


Paper II Bhaishajya Kalpana

Part A
1. History and Chronological evolution of Bhaishajya Kalpana, Concept of Bhashaja and Aushadh, fundamental principles of Bhaishajya Kalpana. Technical terminologies (Paribhasha) used in Bhaishajya Kalpana.

2. Classical and Contemporary concepts of Collection, storage, Saviryata Avadhi and preservation methods of different fresh and dry Aushadhi dravyas and their graahya agraahyatva

3. Detailed knowledge of routes of drug administration, Aushadha matra, Anupana, Sahapana, Aushadha Sevana Kala, Kala Avadhi, Pathya, Apathya (Posology).

4. Detailed knowledge of manufacturing, standardization, quality control, pharmacopeial standards, storage, shelf life and development of innovative technology with Standard manufacturing Operating Procedures of following dosage forms
   iii) Kritanna and Bhashaja Siddha Anna Kalpana, Aharopayogi varga, concept of medicinal and functional food, dietary supplements and nutraceuticals etc.
   v) Bahya Prayogartha Kalpana: Lepa, Upanaha, Udvant, Avachurnana / Avadhulana, Abhyanga, Dhupana, Malahara.
   vi) Mukha, Karna, Nasa, Netropacharartha Kalpana:

PG Final Year Syllabus-16
Basti Kalpana: Basti Yantra Nirmana, Types of basti. Anuvasana and Asthapanas basti. Karma, kala and yoga basti etc. Basti Kalpa (Madhutailika, Piccha basti etc.), Comparison of Asthapanas and Anuvasana basti with evacuation and retention enema.

Part B
All the following procedures are to be studied in relevance to Ayurvedic Bhaishajya Kalpas.
1. Methods of Expression and Extraction: Maceration, percolation, distillation, infusion and decoction.
2. Liquids: Clarified liquid, syrup, elixir, filtration techniques
4. Semisolid dosage forms, emulsions, suspensions, creams and ointments, sterilization of ophthalmic preparations.
5. An introduction to various cosmetic excipients.
6. Drying, open and closed air drying, freeze drying, vacuum drying and other drying methods pharmaceutical excipients.
7. Study of classical texts with special emphasis on Chakradatta, Sharangadhara Samhita, Bhaishajya Ratnavali, Bhava Prakasha, Yogaratnakara, relevant portions of Brihatrayi, Ayurvedic Pharmacopeia of India, Ayurvedic Formulary of India.

Paper III  Rasa Chikitsa & Aushadha Yoga Vigyana

PART- A
2. Detailed knowledge of Aushadhi patha Nischiti and sanyojan (formulation composition), dose, anupana and method of administration, therapeutic efficacy and uses (indications and contra-indications), probable mode of action etc. of the following Aushadhi yogas

iii. Parpati Rasa : Rasa Parpati, Loha Parpati, Tamra Parpati, Suwarna Parpati, Gagana Parpati, Vijay Parpati, Panchamrit Parpati, Shwet Parpati, Bola Parpati

iv. Pottali Rasa: Rasagarbha pottali, Hemagarbha pottali, Mallagarbha pottali, Hiranyagarbha pottali, Shankagarbha pottali, Lokanatha rasa, Mriganka Pottali


Part B
Detailed knowledge of Aushadhi patha Nischiti and sanyojan (formulation composition), dose, anupana and method of administration, therapeutic efficacy and uses (indications and contra-indications), probable mode of action etc. of the following Aushadhi yogas

i. Panchavidha Kashayas and their Upakalpa: Ardraka swarasa, Tulasi swarasa, Vasa putapaka swarasa, Nimba kalka, Rasona kalka, Kulattha Kwath, Punarnavasthaka kwath, Rasna saptaka kwath, Dhanyak hima, Sarivadi hima, Panchakola phanta, Tandulodaka, Mustadi pramathyka, Kharjuradi mantha, Shadanga paniya, Laksha rasa, Arjuna kshirapaka, Rasona kshirapaka, Chinchana panaka, Candana panaka, Banapsha shankara, Nimbu shankara, Amrita satva, Ardraka satva, Ajamoda arka, Yavanyadi arka

ii. Kritanna and Bhesajya Siddha Ahara Kalpana: Yavagu, (Krita and Akrita), Ashtaguna manda, Laja manda, Peya, Vilepi, Krishara, Yusha, Mudga yusha, Kulattha yusha, Saptamushtika yusha, Khada, Kambalika, Raga, Shadava, Mamsarasas, Veshavar, Dadhi, Katvar Dadhi, Dadhi Mastu, Takra, Ghol, Udaspita, Mathita, Chhacchika etc.

iii. Churna: Sitopaladi Churna, Talisadi Churna, Triphala Churna, Hingvashtaka Churna, Avipattikara Churna, Swadishta Virechana Churna, Bhaskar Lavana Churna, Sudarshana Churna, Maha Sudarshana Churna, Gandharva Haritaki Churna, Pushyanuga Churna, Ajamodadi Churna, Hingvadi Churna, Eladi Churna, Dadimasthaka Churna, Trikatu Churna, Vaishwanara Churna, Gangadhara Churna, Jati phaladi Churna, Narayana Churna etc.


vi. Sneha Kalpa
- *Sneha Moorchna* - Ghrita Murchana, Taila Murchhana
- *Siddha Ghrita* - Shatavari Ghrita, Jatyadi Ghrita, Phala Ghrita, Dadihadi Ghrita, Kshirashatpala Ghrita, Mahatrubhaka Ghrita, Dhanvantari Ghrita, Amritaprasa Ghrita, Kalyanaka Ghrita, Brahmi Ghrita, Changeri Ghrita, Panchatikta Ghrita, Sukumara Ghrita, Panchagavya Ghrita
- *Siddha Taila* - Maha Narayana Taila, Maha Masha Taila, Bala Taila, Nirgundi Taila, Shabdindu Taila, Vishagarbha Taila, Sahacharadi Taila, Jatyadi Taila, Apamarga Kshara Taila, Tuvaraka Taila, Kshirabala Taila (Avartita), Lakshadi Taila, Anu Taila, Kumkumadi Taila, Hingutriguna Taila, Kottumuchukadi Taila, Prasarinyadi Taila,
PAPER – IV Pharmacology and Pharmacy Management

PART - A
1. General Pharmacology:
   b) Routes of drug administration
   c) Factors modifying drug effect, Bioavailability and Bioequivalence, drug interactions, adverse drug reaction and drug toxicity
   d) Preclinical evaluation: experimental pharmacology [bioassay, in vitro, in vivo, cell line studies] animal ethics.
4. Toxicity of heavy metals and chelation therapy.
5. Knowledge of toxicity and pharmacological activities of herbo-mineral compounds.

Part B
2. Pharmaceutical dosage form design (Pre-formulation)
3. Packaging materials and Labeling
5. Pharmaceutical Marketing, product release and withdrawals.
6. Hospital, Dispensing and Community pharmacy.
8. Laws Governing Ayurvedic drugs
i. Relevant regulatory provisions of Ayurvedic drugs in Drug and Cosmetics Act - 1940 and Rules - 1945
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

9. Regulatory Affairs related to International Trade and Practices of Ayurvedic Drugs

10. Introduction to Ayurvedic Pharmacoepia of India, Ayurvedic Formulary of India.

11. Introduction to Indian Pharmacoepia, British and United States Pharmacoepia, Pharamcoepial Codex

12. Introduction to Traditional Knowledge Digital Library

Practicals:-

Minimum 150 Practicals are to be performed covering all the dosage forms.
Educational Visits to minimum Five (5) GMP approved Ayurvedic Pharmacies.
Ten days posting in R & D / Production unit in GMP certified Ayurvedic Pharmacy.
Minimum attendance in three National Conferences within three academic years.
Minum 10 clinical cases using different dosage forms are to be studied and recorded for efficacy and ADRs (if any).
Minimum one research paper on the core contributory work of dissertation published or accepted in peer reviewed, indexed journal.
Examinee has to submit supporting documents in relation to above mentioned academic activities at the time of Practical examination.

Pattern of Practical Examination

Total Marks : 100

Duration of the practical: 2 days

1. Identification of the specimen: 10 Marks
2. Drug Processing 30 Marks
   (10+10+5+5)
   i) Major Practicals: 2 (1 Rasashastra and 1 Bhaishajya Kalpana)
   ii) Minor Practicals: 2 (1 Rasashastra and 1 Bhaishajya Kalpana)
3. Drug testing and Analysis 10 Marks (5+5)
   i) Rasaushadhi – 1
   ii) Kashthaushadhi – 1

4. Power Point Presentation on dissertation work: 15 Minutes 10 Marks

6. A Demo Lecture on any subject topic: 10 Minutes. 10 Marks

7. Documentation 15 Marks
   i. Journals (Practical Records) of minimum 75 practicals (25 each from Rasa Shastra, Bhaishajya Kalpana and Analytical part).
   ii. Reports of the Visits
   iii. Case Records

8. Viva Voce examination 15 Marks

Reference Books:-
1. Rasahridaya Tantra
2. Rasarnava
3. Rasaratna Samuccahaya
4. Ayurved Prakasha
5. Rasendrachudamani
6. Rasendra Chintamani
7. Rasatarangini
8. Rasapraksha Sudhakar
9. Rasamrita
10. Rasa Chandanshu : CCRAS Publication
11. Sharangadhara Samhita
12. Sharangadhara Darpan (BP Pandey)
13. Bhavaprakasha
14. Yoga Ratnakara
15. Bhaishajya Ratnavali
16. Siddha Bhaishajya Manimala
17. Ayurvediya Aushadhikarana – Puranik and Dhamanakar
18. Bharat Bhaishajya Ratnakara
19. Rasayoga Sagara
20. Siddha Bhaishajya Manimala
21. Siddha Yoga Sangraha – Yadavaji Trikamji Acharya
22. Sahasrayoga
23. Vaidyaka Paribhasha Pradeepa
24. Dravyaguna Vijnan Part - 1 and 2 - Yadavji Trikamji
25. Chakradatta - Ratnaprabha,
26. Relevant Parts from Charaka Samhita, Sushruta Samhita, Kashyapa Samhita, Ashtanga Sangraha, Ashtanga Hridaya,
27. Remington: Science and Practice of Pharmacy
28. Theory and Practice of Industrial Pharmacy – Leon Lachman et al
29. Clinical Pharmacology, KD Tripathi
30. Clinical Pharmacology, Lawrence Benette
31. Drug Discovery and Evaluation (Pharmacological assays) HG Vogel
32. Pharmacological Basis of therapeutics – Goodman and Gilman
33. Data Base of Medicinal Plants of CCRAS
34. Quality and Standards of Medicinal Plants – ICMR publication
35. Quality Control of Ayurvedic Drugs – PLIM, Gaziabad
36. Ayurvedic Pharmacopeia of India
37. Ayurvedic Formulary of India
38. Indian Pharmacopeia
39. British Pharmacopeia
40. United States Pharmacopeia
41. Pharmacopeia Codex
42. Current Good Manufacturing Practices
43. Drugs and Cosmetic Act 1940 and Rules 1945 with latest amendments
44. Drugs and Magic remedies (Objectionable advertisement) Act-1954
45. Prevention of Food Adulteration (PFA) act
46. Laws pertaining to Narcotics
47. Factory and Pharmacy Acts
49. Brief information on the peer reviewed journals, official websites and other official search engines along with their links (related with the subject)
50. Rutleys Elements of Mineralogy
51. Bhasma Vigyaniyam
52. Kupipakva Vigyaniyam
53. Anupana Manjari

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