

## **2.3. Rasashastra Evam Bhaishajyakalpana**

**(IATROCHEMISTRY AND AYURVEDIC PHARMACEUTICS)**

**Theory -Two Papers**

**Total Marks- 200**

**Teaching hours-200**

**Practical :-**

**Total Marks-200**

**Teaching hours-200**

### **RASASHASTRA**

**Paper 1**

**100 Marks**

**Part A**

**50 Marks**

1. Definition and etymology of Rasa, History of Rasashastra, Importance of Rasaushadhi, Concept of Rasa-Rasayana, Concept of Raseshwar Darshana. Concept of Rasashala and Rasamandap.
2. Brief Description and Application of Technical terminologies (Paribhasha): Avapa, Nirvapa, Dhalana, Bhavana, Jarana, Murchana, Shodhana, Marana, Amrutikarana, Lohitikarana, Mruta Loha, Satwa Patana, Druti, Apunarbhava, Niruttha, Rekhapurna, Varitara.
3. Dravya Varga: Amlavarga, Panchamrittika, Panchagavya, Panchamrita, Ksharashtaka, Dravakagana, Mitra panchaka, Rakta varga, Lavanapanchaka.
4. Brief description of Yantras and their application Ulukhala Yantra, Khalwa Yantra, Kachhapa Yantra, Damaru Yantra - Vidhyadhara Yantra- Urdhwapatan, Addhapatan & Tiryakpatana Yantra, Jaranartha Tulayantra, Dolayantra, Patalayantra, Palika Yantra, Baluka Yantra, Bhudhara Yantra, Sthali Yantra, Swedana Yantra.
5. Brief description & application of Musha (Crucible): Samanya Musha, Gostani musha, Vajra Musha, Maha musha, Yoga musha, Vrintaka Musha, Malla / Pakwa musha. Different types of crucibles e.g. Silica crucible, platinum crucible. Mudra and Sandhi Bandhana.
6. Brief description & applications of Chullika, Satwapatana Koshti, Patala Koshti, Gara Koshti, Angarakoshti and knowledge of various heating appliances viz. Gas stove, Hot plate, Heating mantle, Induction Stove, Hot Air Oven.
7. Concept, definition and types of Puta: Suryaputa, Chandraputa, Gomayaputa, Lawakaputa, Kukkutaputa, Kapotaputa, Varahaputa, Gajaputa, Mahaputa, Kumbhaputa, Valukaputa, Bhudharaputa, Applications of Electric muffle furnace and fuel (diesel) dependent furnace. Brief introduction to thermocouple and pyrometer.

8. Knowledge of Parada: Synonyms, Occurrence, natural and artificial sources of Parada, Hingulottha parada, Types of Parada, Parada Dosha: Naisargika, Yougika, Aupadhika (Kanchuka). Grahya-Agrahya Parada, Parada gati, Parada bandha, Shodhana of Parada. Parada sanskara and brief description of Ashtasamskara.
9. Concept of Murchhana and Jarana of Parada, Preparation of Kajjali, Classification of Rasaushadhi: Khalvi rasa e.g. Tribhuvana Keerti Rasa, Parpati Rasa- Rasa Parpati, Kupipakva Rasa- Rasa sindur, Pottali rasa - Hemagarbha pottali. Rasa sevana vidhi and pathya and apathya.
10. Brief introduction of quality control , standardization and GMP of Rasaoushadhies.

## Part B

50 Marks

Occurrence, Synonyms, Minerological identification, Sources, Types, Grahya and Agrahyata, Shodhana, Marana and other processing techniques. Properties, dose, anupan and therapeutic uses, pathya – apathya and ashuddha, apakwa and avidhee sevanyanya dosha and its management, important formulations of the following:

1. **Maharasa** –Abhraka (Biotite Mica), Vaikrantha, Makshika (Chalco-pyrite), Vimala (Iron Pyrite), Shilajatu, Sasyaka (Peacock ore), Chapala and Rasaka (Sphalerite).
2. **Uparasa** – Gandhaka (Sulfur), Gairika (Red Ochre), Kasisa (Green Vitriol), Kankshi (Alum), Haratala (Orpiment), Manahshila (Realgar), Anjana and Kankustha.
3. **Sadharana Rasa** – Kampillaka, Gauri pashana (Arsenic oxide), Navasadara (Ammonium chloride), Kaparda (Cowry), Agnijara, Giri Sindura (Red oxide of Hg), Hingula (Red Cinnabar) and Mriddara shringa (Litharge).
4. **Dhatu** -Swarna (Gold), Rajata (Silver), Tamra (Copper), Loha (Iron), Vanga (Tin), Naga (Lead), Yashada (Zinc), Kamsya (Bronze), Pittala (Brass), Vartaloha. Dhatu -graha sambandha.
5. **Ratna** - Manikya (Ruby), Mukta (Pearl), Pravala (Coral), Tarkshya (Emerald), Pushparaga (Topaz), Vajra (Diamond), Nilam (Sapphire), Gomeda (Zircon or Cinnamone stone), Vaidurya (Cats eye). Ratnapariksha, Ratnadosha, Ratna-graha sambandha.
6. **Uparatna**- Vaikranta (Tourmaline), Suryakanta (Sun stone), Chandrakanta (Moon stone), Rajavarta (Lapis lazuli), Perojaka (Turquoise), Sphatikamani (Quartz), Trinakanta, Palanka, Putika, Rudhir.
7. **Sudha varga** – Sudha (Lime stone ), Kaparda (Cowries), Shukti (Oyster Shell) , Shankh (Conch Shell), Mriga shringa (Stag horn), Khatika, Godanti (Gypsum) and Samudraphena (Cattle Fish bone), Kukkutanda twak (Hen's Egg Shell).

- 8. Sikata varga** - Sikata (Silica), Dugdhapashana (Talc), Nagapashana / Jaharmohara (Serpentine), Badarshama (silicate of lime ), Vyomashma (Sangeyashab - Jade), Kousheyashma (Asbestos) and Akika (Agate).
- 9. Kshara varga** - Sarja kshara (Sodium bicarbonate), Yava kshara, Tankana kshara (Borax), Surya Kshara (Potassium Nitrate).
- 10. Miscellaneous** - Mandura, Bola, Dam-ul Akhawayan (Raktabandhini), Kasturi, Bhoonag, Mayurpiccha, Sarjarasa, Madhoochishta.
- 11. Visha and Upavisha**-Introduction, collection and storage, classification, synonyms, shodhana, antidote, therapeutic and toxic doses, anupan, therapeutic uses, and formulations of following Visha and Upavisha-Vatsanabha, Kuchala, Jayapala, Dhattura, Bhanga, Bhallataka, Gunja, Arka, Snuhi. Langali, Karaveera, Ahiphena and Chitrakmool.
- 12. Aushadhi Yoga Gyanam- ingredients, manufacturing process, and bhesajprayogvidhi.** Arogya Vardhini Gutika, Kasturibhairava Rasa, Kumara Kalyana Rasa, Garbhapala Rasa, Chandraprabha Vati, Chandramrita Rasa, Pratapalankeshwara Rasa, Pravalapanchamrita Rasa, Anandbhairava Rasa, Yogendra Rasa, Laxmivilas Rasa, Vasantakusumakara, Vasantamalati Rasa, Brihat Vata Chintamani Rasa, Shankha vati, Shwaskuthara Rasa, Hinguleswara Rasa, Hemagarbhapottali, Hridyarnava Rasa, Swarnavanga, Makaradhwaja, Putapakwavaisham Jwarantaka Loha, Vatvidhvamsan Rasa, Kamadugha Rasa, Laghusutshekhar Rasa, Navayasa Loha, Saptamrita Loha, Tamra Parpati, Panchamrita Parpati, Sveta Parpati.
- 13. Introduction to pharamcovigilance and its status in India, with reference to Ayurvedic drugs.**  
 A) Necessary to know – From part A and B : S. No. 1 to 9  
 B) Desired to know – From part B : S. No. 10

### Practical

**100 Marks**

#### Minimum Twenty five practicals to be performed

- |                         |  |
|-------------------------|--|
| <b>1. Rasa [Parada]</b> | Samanya Shodhana of Parada<br>Kajjali<br>Mugdha rasa   |
| <b>2 Maharasa varga</b> | Shodhana of Abhraka<br>Dhanyabhraka nirmana<br>Shodhana of Makshika<br>Shodhana of Shilajatu<br>Shodhana of Sasyaka. |
| <b>3. Uparasa varga</b> | Shodhana of Gandhaka<br>Shodhana of Gairika  |

<p><b>4. Sadharana rasa varga</b></p> <p><b>5. Sudha Varga</b></p> <p><b>6. Dhatu varga</b></p> <p><b>7. Kshara Varga</b></p> <p><b>8. Parpati</b></p> <p><b>9. Visha varga</b></p>	<p>Shodhana of Kasisa  Shodhana of Kankshi  Shodhana of Haratala  Rasa manikya nirman  Shodana of Manashila  Shodhana of Hingula  Sodhana of Navasadar  Shodhana of Kapardika  Shodhana of Shankha  Shodhana of Shukti  Shodhana of Pravala mula  Shodhana of Godanti  Samanya Shodhana of Lauha  Shodhana of Mandura  Samanya Shodhana of Tamra  Shodhana of Naga  Shodhana of Vanga  Shodhana of Yashada  Shodhana of Tankana  Preparation of Rasaparpati, Bola  Parpati and Swetaparpati  Shodhana of Vatsanabha,  Bhallataka, Kupilu, Dhattura beeja,  Jayapala, Gunja, Chitrakamoola.</p>
---	--

### **PRACTICAL FOR DEMONSTRATION / GROUP PRACTICALS**

- 1.** Hingulad rasakrishti (Hingulottha Parada).
- 2.** Bhasma: 4 (One from each group)
  - i. Abhraka bhasma, Swarna Makshika bhasma, Tamra bhasma
  - ii. Vanga bhasma, Naga bhasma, Yashada bhasma
  - iii. Mandura bhasma, Kasisa bhasma
  - iv. Shankha bhasma, Kapardika bhasma, Godanti bhasma.
- 3.** Pishti : 1 Pravala pishti, Jaharmohara / Akika pishti,  
Trina kantha mani pishti, Mukta pishti.
- 4.** Druti : 1 Gandhaka druti.
- 5.** Formulations 4 (one from each group)
  - i. Rasasindura, Swarna vanga, Sameer pannaga rasa
  - ii. Saptamruta lauha, Punarnava mandura, Navayasa lauha
  - iii. Agnitundi vati, Tribhuvana kirti rasa, Sootshekhara rasa,  
Laghusutashekhara Rasa
  - iv. Arogyavardhini vati, Laghumalinivasanta rasa, Hinguleshwar rasa,  
Anandbhairav rasa, Rajapravartini vati

## BHAISHAJYAKALPANA

**Paper II**

**100 Marks**

**Part A**

**50 Marks**

- 1. History and Chronological (kramika vikasa) development** of Bhaishajyakalpana. Concept of Aushadha and Bhesaja.
- 2. Fundamental principles of Bhaishajya Kalpana.**
- 3. Study of Ancient and Contemporary systems of 'Maana' (Units of measurement), Shushka -ardra -drava- dravya grahan niyam** (Rules of measures of dry, fresh, liquid drugs); Grahyagrahyatva, Nava Puran dravya grahan niyam.
- 4. Guidelines and Methods of collection, storage, preservation of Aushadhi dravya.** Concept of Saviryatavadhi (shelf life) and stability in ancient and contemporary science.
- 5. Bhesajprayogavidhi : Aushadha Matra, Anupana and sahapan and Aushadh sevana kaala. (Posology).**
- 6. Panchavidha kashaya kalpana and Other kalpana :** Kashaya Yoni, Swarasa, Kalka, Kwatha, Hima and Phanta, Pramathya, Aushadha siddha paniya, Tandulodaka, Laksha rasa, Mantha, Panaka, Arka, Churna, Rasakriya, Ghana, Phanita, Avaleha, Prasha, Gudapaka, Sharkara, Syrups, Ksheerapaka, Satva, Guggulu kalpana, Vati, Gutti, Pinda, Modaka, Varti Preparation of Tablets, pills, capsule and Suppositories. Masi kalpana, Lavana kalpana, Kshara kalpana and Kshara sutra.
- 7. Introduction and general knowledge of useful instruments/ Equipments -** Disintegrator, Mixer, Grinder, End Runner, Edge Runner, Sieve-Shaker, Granulator, Tableting machine, Pill making machines, coating and polishing pan, capsule filling machine, sieves and mesh.
- 8. Sneha kalpana :** Sneha yoni, Types of Sneha, Sneha murchana vidhi, Sneha paka vidhi, patra paka, types and their use. Sneha siddhi lakshana, dose, Preparation and uses of Triphala Ghrita, Bramhighrita, Narayana taila, Anutaila.
- 9. Sandhana Kalpana and its types:** Madya Kalpana, Asava, Arishta, Sura (Prasanna - Kadambari - Medaka - Jagala - Bakkasa), Maireya, Surasava, Shukta, Kanjika, Sauvira, Tushodaka, Sidhu kalpana their methods of preparation, siddhi lakshana, properties, uses, doses. Takrarishta, Draksharishta, Ashokarishta, Dashamoolarishta, Kumaryasava, Chandanasava.

- 10. Kritanna and Aushadhisiddha anna Kalpana:** Definition of Kritanna, Concept of Pathya and Apathya, Yavagu –types of yavagu, Manda, Peya, Vilepi, Anna, Bhakta, Odan, Yush –types, Krishara, Mansa rasa, Vesavara, Khad Kamblika, Raga, Shadava, Dadhi and Takra Varga – Takra, Udasvita, Katvar, Mathita, Chhachika.

## **PART B**

- 1. Bahyopacharartha kalpana (External Applications)-Lepa** -Types of Lepa, methods of preparation and mode of application. Udvartan and Avachurnan, Method of preparation of Siktha Taila, Malahara – Sarjarasa Malahara, Gandhak Malahara, Upanaha, Atasi upanaha, Shatadhouta and Sahastradhouta Ghrita. Brief introduction of semi solid dosage forms- Ointments, Creams, Emulsions, Gels, Lotions.
- 2. Principles and precautions for preparation of formulations for following:**
- 2.1 Netraupacharartha kalpana (Ophthalmic preparations)** – Seka, Drava, Pindi, Anjana - Ashchyotana - Tarpana - Putapaka and Vidalaka, Methods of preparation of eye drops, eye ointments.
- 2.2 Nasyopachararth Kalpana** - Classification of Nasya, Navana, Avapidana, Pradhaman, Marsha and Pratimarsha nasya.
- 2.3 Dhumapanarth kalpana** - Classification of dhumpaana, Method of preparation of dhumvarti and it's therapeutic uses. Dhupan: Vranadhupan, arshodhupan.
- 2.4 Mukhaprayogarth kalpana** - Gandoosha - Kavala - Pratisaran, Tooth paste, Tooth powders and Mouth wash.
- 2.5 Basti kalpana-** Classification, Method of preparation of Niruha and Anuvasana, Basti Therapeutic properties and uses of Basti.
- 3** Brief knowledge of Standardization of Ayurvedic formulations- Kastaushadhi.
- 4** Brief introduction of Drug and Cosmetics Act 1940 and Rules 1945.
- 5** Concept of, Aushadhi Nirmanshala, with respect to Good Manufacturing Practices (GMP) in accordance to Schedule T.

## **Practical Bhaishajya Kalpana**

**50 Marks**

### **Following practicals to be performed- (Minimum one from each category)**

Method of preparation, therapeutic uses, dose and anupana of the following

- 1.** Swarasa- Ardraka swarasa, Tulasi swarasa, Kumari Swarasa, Vasa putapaka swarasa
- 2.** Kalka- Nimba kalka, Rasona kalka.
- 3.** Kwatha- Punarnavasthaka kwatha, Rasna Saphthaka kwatha, Kulattha kwath.
- 4.** Hima- Dhanyaka hima, Sarivadi hima .
- 5.** Phanta- Panchakola phanta, Yastimadhu Phanta.

6. Pramathya- Mustadi pramathya
7. Mantha- Kharjuradi mantha
8. Aushadh siddha paniya- Shadanga paniya
9. Laksha Rasa.
10. Arka - Yavani arka, Gulab arka, Misreya arka
11. Panaka- Chinchā panaka, Chandan panaka.
12. Sharkara- Banapsha sharkara, Nimbu sarkara.
13. Churna- Sitopaladi Churna, Hinguwashtaka Churna.
14. Gutika- Chitrakadi Gutika, Sanjivani Vati.
15. Guggulu-Triphala Guggulu, Kaishora Guggulu.
16. Avaleha- Chyavanaprashavaleha, Vasavaleha, Vyaghri Haritaki avaleha, Manibadra avaleha.
17. Rasa kriya - Darvi Rasakriya, Guduchi Ghana, Kutaja Ghana.
18. Khanda- Haridra khanda, Narikela khanda, Sowbhagya shunti paka
19. Satva- Amruta satva,
20. Varti- Phala varti, Chandrodaya varthi
21. Lavana- Arka lavana, Narikela lavana
22. Masi- Triphala masi, Mayurpiccha Masi
23. Ksheerapaka- Arjuna ksheerapaka, Rasona ksheerapaka, Shunthi Ksheerpaka
24. Kshara- Apamarga kshara, Snuhi kshara, Ksharasutra. .
25. Manda, Peya, Vilepi, Yavagu, Krishra, Vesavara
26. Yusha - Mudga yusha, Saptamushtika yusha, Kulattha yusha
27. Aristha- Kutajarishta, Takrarishta .
28. Asava - Kumaryasava, Kanakasava
29. Sukta kalpana- Kanji
30. Udaka- Tandulodaka
31. Upanaha- Atasi Upanaha
32. Siktha Taila Nirmaan
33. Malahara- Sarjarasa malahara, Gandaka malahara, Cream, Emulsion. Sneha Kalpana  
Sneha Murchhana - Ghrita Murchana, Taila Moorchnana, Ghrita kalpana: Jatyadi ghrita, Triphala ghrita, ksheerashatphala ghrita- Taila kalpana-Panchaguna taila, Arka taila, Bala taila, Jatyadi taila
35. Taila patana- Bhallataka taila patana, Jayapala taila patana
36. Shodhana- Guggulu, Hingu.

**II. Visit of minimum three GMP approved Ayurvedic manufacturing units.**

### **Distribution of Practical Marks: Total 200 Marks**

#### **Rasashastra - 100**

1. Record Book - 10 Marks
2. Experiment - 30 Marks
3. Spotting - 20 Marks
4. Viva-voce - 40 Marks

#### **Bhaishajyakalpana - 100**

1. Record Book - 10 Marks
2. Experiment - 30 Marks
3. Spotting - 20 Marks
4. Viva-voce - 40 Marks

#### **Reference Books**

1. Adyatan Rasa Shastra
2. Abhinav Rasa Shastra
3. Asava Arishta Vigyanam
4. Ayurvediya Rasa Shastra (Sachitra)
5. Ayurvediya Rasa Shastra
6. Rasa Bhaishajya Paribhasa
7. Ayurvediya Rasa Shastra
8. Ayurved Prakash
9. Drugs and Cosmetic Act - 1940
10. Paka Darpana
11. The Paka-darpana of King Nala
12. Parada Vigyaniam
13. Pratyaksha Aushadh Nirmanam
14. Bhaishjyakalpana Vigyanam
15. Rasa Tarangini
16. Rasa Darpan
17. Rasa Bindu
20. Rasa Bhaishajya Kalpana Vigyan Vaidya
21. Rasa Mitra
22. Rasa Ratna Samuchchaya (Hindi)
23. Rasaratna samuchchaya-
24. Rasaratna samuchchaya -

R.K. Goyal  
Vaidya Somadev Sharma  
Dr. Pakshdhar Jha  
Chandrabhusan Jha  
Badrinarayan Pandey  
Sureshananda Thapaliyal  
Prof. Siddhi Nandan Mishra  
Vaidya Gujrat Mishra

Dr. Indradev Tripathi  
Dr. Madhulika critical study  
Vasudev M. Dwivedi  
Acharya VishwanathDwivdei  
Dr. Agnihotri  
Sadanand Sharma  
Prof. Bhajan Das Swami  
Dr. Sanjay Sharma  
Santosh Kumar Khandal  
Dr. Tryambak Nath Sharma  
Dattatreya Ananta Kulkarni.  
Ambikadatta shastri  
Damodar Joshi



25. Rasa Shastra Prayogiki Srivastava,
26. Rasamritam
25. Rasayan Sara
26. Rasendra Sampradaya
27. Rasendra Sara Sangraha
29. Vaidyak Paribhasha Pradeep (Hindi Translation)
30. Sharangadhara Samhita
31. Bharatiya Bhaishajya Kalpana Vigyana
32. Bhaishajya Kalpana Vijnanam
33. Rasa Shastra (English)
34. Rasa Ratna Samuchchaya (English)
35. Rasendra Chintamani (Hindi)
36. Ayurvedic formulary of India
38. Ayurvedic Pharmacopoeia of India , CCRAS
39. Bhaishjya Kalpana Vigyan
40. Textbook of Rasashasra
41. Ashadhayoga Vigyanam
42. Vaidyaka Paribhasha Pradipa (English Translation)
43. Relevant parts of Brihatrayee
44. Text book of Bhaishjya Kalpana -
45. Text Book of Rasa Shastra
46. Rasa Chandashu
47. Bhaishjya Ratnawali
48. Yoga Ratnakar

Yadav and Prof. Ramesh Saxena  
Vaidya Yadavji Tirkramji Acharya  
Vaidya Shyam Sunderacharya  
Vaishya

Vaidya Hajari Lal Sukul  
Vaidya Gopal Krishna  
Dr. Indradev Tripathi  
Dr. Radhakrishna Parashar  
Gananath Vishwanath Dwivedi  
Dr. K Ramachandra Reddy  
Prof. Damodar Joshi  
Prof. Damodar Joshi  
Prof. Siddhinandan Mishra

Siddhi Nandan Mishra  
Dr. K Ramachandra Reddy.  
Dr. K. Ramachandra reddy  
Dr. K. Ramachndra Reddy &  
Dr. P. Suresh

Dr Shobha G Hiremath  
Dr P H C Murthy  
Prof S S Savirkar (CCRAS Publication)  
Prof S N Mishra

\*\*\*\*\*  
\*\*\*  
\*