

**DETAILED SYLLABUS FOR THE POST OF ASSISTANT
PROFESSOR IN RASASASTHRA AND BHAISHAJYAKALPANA
IN AYURVEDA MEDICAL EDUCATION
(Cat.No. 344/2021)**

Module I 30 marks

RASASHASTRA

1. History and Chronological evolution of Rasashastra, Concept of Raseshwara darshan. Fundamental Principles of Rasashastra, Technical terminologies (Paribhasha) used in Rasa shastra.
2. Detailed knowledge of ancient and contemporary Yantropakarana and their accessories used in aushadhikaran and their contemporary .01.modification such as Yantras, mushas, putas, Koshtis, bhrashtis, 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 (Water) and other dravas (Liquids), Kala(Season), Patra (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.
5. Detailed knowledge of different procedures of Shodhana, Jarana, Murchana and Marana, Concept of Puta, definition, types and specifications of different Putas. Significance of different Putas in relation to Bhasmikanarana and therapeutic efficacy of dravya under process. Bhasma pariksha vidhi and its significance in relation to contemporary testing procedures. Amritikaran and Lohitikarana.
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 (Substitute) dravya and discussion on controversial drugs. 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.

8. Detailed ancient and 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 rasa, Dhatu, Upadhatu, Ratna, Uparatna, Visha, Upavisha, Sudha varga, Lavana varga, Kshara varga, Sikata varga and other miscellaneous drugs used in Rasashastra.

9. 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 following Bhasmas and Pishtis

Bhasma – Abhraka Bhasma, Svarnamakshika Bhasma, Kasis Bhasma, Svarna Bhasma, Rajata Bhasma, Tamra Bhasma Loha Bhasma, Mandur Bhasma, Naga Bhasma, Vanga Bhasma, Yashad Bhasma, Trivanga Bhasma, Pittala, Kamsya and Varthaloha Bhasma, Shankha Bhasma, Shukti Bhasma, Kapardika Bhasma, Godanti Bhasma, Praval Bhasma, Mrigashringa Bhasma, Mayurpiccha Bhasma, Kukkutand twak Bhasma, Hiraka Bhasma, Manikya Bhasma.

Dravaka – Shankha Dravaka

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

11. 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.

12. Study of classical texts with respective commentaries and special emphasis on Rasarnava, Rasahridaya tantra, Rasa Ratna Samucchaya, Rasendra Chintamani, Rasendra Chudamani, Rasa Ratnakara, Rasadhyaya, Rasa Kamdhenu, Rasa Chandanshu, Anandkanda, Siddha Bhashaja Manimala, Ayurveda Prakash, Rasatarangini, Bhaishajya Ratnavali, Rasamritam etc. and the books mentioned in the Schedule I of D & C Act – 1940. Relevant portions of Brihatrayi.

Module 2 30 marks

BHAISHAJYA KALPANA

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. Knowledge about Good collection and storage practices (GCP and GSP) as per WHO and NMPB guidelines.

3. Detailed knowledge of routes of drug administration, Aushadha

matra, Posology, Anupana, Sahapana, Aushadha Sevana Kala, Sevan Avadhi, Pathya, Apathya.

4. Detailed knowledge of manufacturing, standardization, quality control, pharmacopeial standards, storage, shelf life and development of innovative technology with Standard Operating Procedures of following dosage forms.

i) Panchavidha Kashaya, Churna, Rasakriya, Ghana, Avaleha, Pramathya, Mantha, Panaka, Sarkara, Kshirapaka, Ushnodaka, Aushadha Siddha Udaka, Arka, Satva, Kshara, Lavana, Masi, Gutika, Vatika, Modaka, Guggulu and Varti etc.

ii) Sneha Kalpana: Concept of Accha sneha and Sneha pravicharana and Murchhana. Sneha paka, types of sneha paka and Sneha siddhi lakshana, Avartana. Sneha kalpa karmukata (Pharmacokinetics and dynamics of sneha kalpa). Role of sneha in relation to absorption of drug.

iii) Kritanna and Bsheshaja Siddha Anna Kalpana, Shuka and shmbi Dhanya Kalpna, Dugdha, Dadhi and Takra Vikar and Mansarasadi Krutanna Kalpana, Aharopayogi Varga, Concept of medicinal and functional food, dietary supplements and nutraceuticals etc.

iv) Sandhana kalpana: Madya varga and Shukta varga. Asava yoni. Alcoholic and acidic fermentation. Sandhana kalpa karmukata (Pharmacokinetics and dynamics). Advances in fermentation technology. Knowledge of regulations in relation to alcoholic drug preparations.

v) Bahya Prayogartho Kalpana: Lepa, Upanaha, Udvartan, Avachurnana/ Avadhulana, Abhyanga, Dhupana, Malahara.

vi) Mukha, karna, Nasa, NetropachararthaKalpana:

vii) Basti Kalpana: Basti Yantra Nirmana, Types of basti. Anuvasana and Asthapana basti. Karma, Kala and Yoga basti etc. Basti Kalpa (Madhutailika, Piccha basti etc.), Comparison of Asthapana and Anuvasana basti with evacuation and retention enema.

5. Methods of Expression and Extraction: Maceration, percolation, distillation, infusion and decoction. Knowledge about Filtration techniques.

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

7. Liquids: Clarified liquid, Syrup, Elixir.

8. Solid dosage Forms: Powders: Size reduction, Separation techniques, particle size determination, Principles of mixing.

Tablets: Methods of tableting, Suppositories, Pessaries and Capsules, Sustained release dosage forms.

9. Semisolid dosage forms- Emulsions, Suspensions, Creams and Ointments, Sterilization of Ophthalmic preparations.

10. An introduction to various cosmetic preparations such as Toiletries, Shapoo, Shaving creams, Hair oils, Face Powders (Talcum powders). Vanishing creams, lotions and Moisturisers, Face pack, Deodourents and Perfumes.

11. Study of classical texts with special emphasis on Chakradatta, Sharangadhara Samhita, Bhaishajya Ratnavali, Bhava Prakasha, Yogaratnakara, relevant portions of Brihatrayi, Ayurvedic Pharmacopeia of India,

12. Ayurvedic Formulary of India.

Module III 20 marks

RASA CHIKITSA & AUSHADHA YOGA VIJNANA

1. Rasachikitsa, Kshetrikaran, Rasajirna, Lohajirna, Ashuddha, Apakva, Avidhi Rasadravya Sevanajanya Vikara evam Vikara shanti upaya (Management and knowledge of untoward effects of inappropriately processed and administered drugs).

2. Detailed knowledge of Aushadhi patha Nischiti and Sanyojan (Formulation design and 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.

a. Kharaliya Rasa: Shwasa kuthara Rasa, Tribhuvana kirti Rasa, Higuleshwara Rasa, Ananda bhairava Rasa, Maha Lakshmilasa Rasa, Vasnata kusumakara Rasa, Vasanta malti Rasa, Brihat vata chintamani Rasa, Laghu suta shekhar Rasa, Suta Shekhara Rasa, Ram ban Rasa, Chandra Kala Rasa, Yogendra Rasa, Hridayarnava rasa, Grahani kapata Rasa, Garbha pala Rasa, Jalodarari Rasa, Mrityunjaya Rasa, Madhumalini vasanta Rasa, Arsha kuthara Rasa, Krimi mudgara Rasa, Suchika bharana Rasa, Tri netra Rasa, Smruti sagara Rasa, Vata gajankusha Rasa, Agni kumar Rasa, Ekangavir Rasa, Kama dugha Rasa, Purna chandrodaya Rasa, Pratap lankeshwara Rasa, Maha vata vidhwansaka Rasa, Kasturi bhairava Rasa, Mahajwarankusha Rasa, Chandra mrita Rasa, Kapha ketu Rasa, Prabhakara Vati, Pravala Panchamrita, Gandhaka Rasayana, Raktapitta kulakandan rasa, Amavatari Rasa, Kravyada Rasa, Garbha chintamani Rasa, Chintamani Rasa, Trilokya

chintamani Rasa, Pradarantaka Rasa, Shwasakasa Chintamani Rasa,
Arogya vardhini Vati, Chandra prabha Vati, Agni tundi vati, Shankha Vati.

b. Kupipakva Rasa: Rasa Sindura, Makaradhwaja, Sidha makaradhwaja,
Samira pannaga rasa, Malla sindura, Rasa karpura, Rasa pushpa.

c. Parpati Rasa: Rasa Parpati, Loha Parpati, Tamra Parpati, Suvarna
Parpati, Gagana Parpati, Vijay Parpati, Panchamrit Parpati, Shwet
Parpati, Bola Parpati

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

e. Loha evam Mandura Kalpa: Ayaskriti, Loha Rasayana, Amla pittantaka
loha, Chandanadi loha, Dhatri loha, Navayasa loha, jwarantaka loha,
Shilajatwadi loha, Tapyadi loha, Saptamrita loha, Pradarantaka loha,
Rohitaka loha. Punarnava Mandura, Shatavari Mandura, Triphala
Mandura, Mandura Vataka etc.

f. Knowledge of Essential Ayurvedic drug list as prescribed by Dep. Of
AYUSH (Govt. Of India) and its significance.

3. Detailed knowledge of Aushadhi patha Nischiti and sanyojan
(Formulation designing and 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.

a. Panchavidha Kashayas and their Upakalpa: Ardraka swarasa, Tulasi
swarasa, Vasa putapaka, Nimba kalka, Rasona kalka, Kulattha kwath,
Punarnavasthaka kwatha, Rasna saptaka kwatha, Dhanyak hima,
Sarivadi hima, Panchakola phanta, Tandulodaka, Mustadi pramathya,

Kharjuradi mantha, Shadanga paniya, Laksha rasa, Arjuna kshirapaka, Rasona kshirapaka, Chinchapanaka, Candanapanaka, Banapsha sharkara, Nimbu sharkara, Amrita satva, Ardraka satva, Ajamoda arka, Yavanyadi arka.

b. Kritanna and Bhesaja Siddha Ahara Kalpana: Yavagu, (Krita and Akrita), Ashtaguna manda, Laja manda, Peya, Vilepi, Krishara, Yusha, Mudgayusha, Kulatthayusha, Saptamushtika yusha, Khada, Kambalika, Raga, Shadava, Mamsarasa, Veshavara, Dugdha Vikara – Piyush, Kilata, Kshirashka, Hyaiyangavina, Morata, Santanika, Dadhi and Dadhi Vikara, Katvar Dadhi, Dadhi Mastu, Takra, Ghola, Udasvita, Mathita, Chhacchika etc.

c. 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, Dadimashtaka Churna, Trikatu Churna, Vaishwanara Churna, Gangadhara Churna, Jati phaladi Churna, Narayana Churna etc.

Gutika: Arogya vardhani vati, Chandra prabha vati, Chitrakadi Gutika, Sanjivani Vati, Lasunadi vati, Lavangadi Vati, Vyoshadi vati, Khadiradi Vati, Kankayana Vati, Abhayadi modaka, Samshamini Vati, Kutaja Ghana vati, Shiva Gutika, Eladi Vati, Kasturyadi Gutika, Arshoghni Vati.

d. Guggulu: Yogaraja Guggulu, Maha Yogaraja Guggulu, Trayodashanga Guggulu, Kanchanara Guggulu, Rasnadi Guggulu, Triphala Guggulu, Simhanada Guggulu, Gokshuradi Guggulu, Kaishora Guggulu, Panchatikta Guggulu, Amritadi Guggulu, Vatari Guggulu, Lakshadi Guggulu, Abha Guggulu, Navaka Guggulu, Nava Karshika Guggulu.

e. Sneha Kalpa

f. Sneha Moorchhana – Ghrita Murchana, TailaMurchhana

g. Siddha Ghrita - Shatavari Ghrita, Jatyadi Ghrita, Phala Ghrita, Dadimadi Ghrita, Kshirashatpala Ghrita, Mahatriphala Ghrita, Dhanvantari Ghrita, Amritaprasha Ghrita, Kalyanaka Ghrita, Brahmi Ghrita, Changeri Ghrita, Panchatikta Ghrita, Sukumara Ghrita, Panchagavya Ghrita.

h. Siddha Taila - Maha Narayana Taila, Maha Masha Taila, Baja Taila, Nirgundi Taila, Shadbindu Taila, Vishagarbha Taila, Sahacharadi Taila, Jatyadi Taila, Apamarga Kshara Taila, Tuvaraka Taila, Kshirabala Taila (Avartita), Lakshadi Taila, Anu Taila, Kumkumadi Taila, Hingutriguna Taila, Kottumchukadi Taila, Prasarinyadi Taila, Dhanwantari Taila, Balashwagandhadi Taila, Balaguduchyadi Taila, Nilibhringyadi Taila, BrihadSaindhavadi Taila, Irimedadi Taila, Chandanadi Taila, Panchaguna taila, Arka Taila, Pinda Taila, Kasisadya Taila.

i. Rasakriya, Avaleha, Khanda etc.: Darvi Rasakriya, Vasa Avaleha, Brahma rasayana, Chyavanprasha Avaleha, Kushmanda Avaleha, Dadima Avaleha, Bilvadi avaleha, Kankaryavaleha, Haridra Khanda, Narikela Khanda, Saubhagya shunthi paka, Amrita Bhallataka, Kamsa Haritaki, Chitraka Haritaki, Vyaghri Haritaki, Bahushala Guda, Kalyana Guda.

j. Sandhana Kalpa: Lodhrasava, Kumaryasava, Ushirasava, Chandanasava, Kanakasava, Sarivadyasava, Pippalyasava, Lohasava, Vasakasava, Kutajarishta, Draksharishta, Raktamitrarka, Dashamularishta, Abhayarishta, Amritarishta, Ashokarishta, Sarasvatarishta, Arjunarishta, Khadirarishta, Ashwagandha Arishta, Vidangarishta, Takrarishta, Drakshasava, Mahadrakshasava, Mritasanjivani sura, Maireya, Varuni, Sidhu, Kanji, Dhanyamla, Madhu Shukta, Pindasava.

k. Anya Kalpa: Phala varti, Chandrodaya varti, Arka lavana, Narikela lavana, Triphala masi, Apamarga kshara, Snuhi kshara, Ksharasutra, Atasi upanaha, Sarjarasa malahara, Gandhaka malahara, Sindhuradi Malahara, Shatadhouta Ghrita, Sahasra Dhouta Ghrita, Siktha taila, Dashanga lepa, Doshaghna lepa, Bhallataka taila patina, Jyotishmati Taila, Bakuchi Taila, Dashanga dhupa, Arshoghna dhupa, Nishadi Netra bindu, Madhutailika Basti, Piccha Basti, Yapana Basti.

Module IV 20 marks

PHARMACOLOGY AND PHARMACY MANAGEMENT

1. General Pharmacology :

a. Principles of Pharmacology, Pharmacodynamics & Pharmacokinetics: Absorption, distribution, Metabolism & excretion, mechanism of action, dose determination and dose response, structure activity relationship .

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.

2. Clinical pharmacology: Evaluation of New Chemical Entity – Phases and methods of clinical research. Ethics involved in human research.

3. Elemental constituents of human body such as Iron, Copper, Zinc, calcium, Manganese etc. and its physiological importance. Deficiencies

and excess of various elements.

4. Toxicity of heavy metals and chelation therapy.

5. Knowledge of toxicity and pharmacological activities of herbo-mineral compounds.

6. Detailed knowledge of Pharmacovigilance – National and International Scenario. Pharmacovigilance of Ayurvedic Drugs.

7. Scope and evolution of pharmacy. Information resources in pharmacy and pharmaceutical Science.

8. Pharmaceutical formulation designing and dosage form design (Pre-formulation).

9. Packaging materials and Labeling.

10. Management of pharmacy, Store and inventory management, Personnel management, Good Manufacturing Practices related to Ayurvedic drug industry.

11. Pharmaceutical Marketing, Product release and withdrawals.

12. Hospital, Dispensing and Community pharmacy.

13. Patenting and Intellectual Property Rights.

14. 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
 - vii. Consumer Protection Act – 1986
 - viii. Knowledge of Good Clinical Practices and Inspection Manual prescribed by Dept. of AUYUSH, Govt. of India.
15. Regulatory Affairs related to International Trade and Practices of Ayurvedic Drugs.
16. Introduction to Ayurvedic Pharmacopoeia of India, Ayurvedic Formulary of India.
17. Introduction to Indian Pharmacopoeia, British and United States Pharmacopoeia, Pharmacopoeial Codex.
18. Introduction to Traditional Knowledge Digital Library

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper