



(From Academic Year 2012-13 & onwards)

Syllabus for MD/MS (Ayurved) Preliminary Examination

5. RASA SHASTRA AND BHAISHAJYA KALPANA
(Iatrochemistry & Pharmaceuticals Science)

PAPER-II

THEORY- 100 marks

PART-A

50 marks

- 01 Fundamental principles of Rasa Shastra and Bhaishajya Kalpana, introduction to Rasachikitsa, Ashuddha and Apakwa Bhasma- sevan Dosha and its management, introduction to Aushadha Sevan Kaal and Prayoga Marga (routes of administration).
- 02 Introduction to basic principles of Aushadha Yoga (formulations).
- 03 Classification of Rasa Dravya - concept and relevance.
- 04 Introduction to principles of Aushadha Nirmana, concept of Shodhan, Marana, Jarana, Murcchhana, Sattvapatan and Amritikarana.
- 05 Concept of Kashaya, Panchavidha Kashaya and other Kalpana.
- 06 Concept of Rasashala, Rasa Mandapa with introduction to pharmacy in accordance with the Good Manufacturing Practices (GMP).
- 07 Critical study of Rasa Ratnasamuchchaya, Rasendra Chintamani, Rasa Tarangini, Sharngadhara Samhita, Chakradutta and Bharat Bhaishajya Ratnakara with special reference to Aushadha-Nirmana.

PART-B

50 marks

- 01 Introduction to methods of analytical, toxicity, experimental and clinical validation of classical and proprietary Ayurvedic formulations.
- 02 Introduction to new dosage forms.
- 03 Introduction to advance instruments of analysis like XRD, XRF, SEM-E-Dax, ICP analysis, Chromatography: TLC, gas chromatography, HPTLC, concept of Nanotechnology and its relevance to Aushadha-Nirman.
- 04 Concept of Pharmacopoeia and Formulary with introduction of 'The Ayurvedic Pharmacopoeia of India' (API) and 'The Ayurvedic Formulary of India' (AFI).
- 05 Introduction to databases of medicinal plants published by CCRAS, ICMR and others.

PRACTICAL

100 marks

Contents:

- 01 Shodhan, Marana, Amritikarana of Rasa Dravya (10 practicals)
- 02 Preparation of different dosage forms (10 forms)
- 03 Pharmacopoeial standards of raw and prepared drugs (20 practicals)

Raw Materials

1. Minerals and Metals

Mineralogical Identification

- 01 Physical form - Crystal and Amorphous
- 02 Hardness on Moh's scale
- 03 Brittleness test
- 04 Fracture and Cleavage
- 05 Streak test
- 06 Luster

2. Plant Material

Macroscopic and Microscopic examination

- a. Organooleptic testing
- b. Estimation of Foreign materials
- c. Microbial load
- d. Moisture content
- e. Determination of ash value - total, water soluble and acid Insoluble ash
- f. Specific gravity
- g. Solubility- water and alcohol
- h. Extract values- water and alcohol
- i. TLC
- j. Determination of optical density
- k. Refractive index
- l. Aflatoxins
- m. Limit tests for heavy metals
- n. pH estimation

Prepared dosage forms:

01 Solid dosage forms

Rasaushadhi

- a) Bhasma and Pishti Pariksha
- b) Determination of Particle size
- c) Limit tests for heavy metals
- d) Determination of moisture content, specific gravity, pH and acid value.

Kasthaushadhi

a. Powders (Churna)

- 01 Particle size
- 02 Bulk density

- 03 Solubility
- 04 Estimation of Foreign material
- 05 Microbial load
- 06 Moisture content
- 07 Determination of ash value - total, water soluble and acid insoluble ash
- 08 Solubility - water and alcohol
- 09 Extract values - water and alcohol
- 10 TLC
- 11 Determination of Optical density
- 12 Refractive Index
- 13 Aflatoxins
- 14 Limit tests for Heavy metals
- 15 pH Value estimation

b. Tablets

- 01 Uniformity in weight and size
- 02 Tablet hardness
- 03 Tablet friability
- 04 Tablet disintegration
- 05 Tablet dissolution

c. Semisolid dosage forms

- a. Moisture content
- b. Sugar content
- c. Microbial load

2. Plant Material

Macroscopic and Microscopic examination

- a. Orgnaoleptic testing
- b. Estimation of Foreign materials
- c. Microbial load
- d. Moisture content
- e. Determination of ash value - total, water soluble and acid Insoluble ash
- f. Specific gravity
- g. Solubility- water and alcohol
- h. Extract values- water and alcohol
- i. TLC
- j. Determination of optical density
- k. Refractive index
- l. Aflatoxins

m. Limit tests for heavy metals

n. pH estimation

Prepared dosage forms:

1. Solid dosage forms

Rasaushadhi

a) Bhasma and Pishti Pariksha

b) Determination of Particle size

c) Limit tests for heavy metals

d) Determination of moisture content, specific gravity, pH and acid value.

Kasthaushadhi

a. Powders (Churna)

01 Particle size

02 Bulk density

03 Solubility

04 Estimation of Foreign material

05 Microbial load

06 Moisture content

07 Determination of ash value - total, water soluble and acid insoluble ash

08 Solubility - water and alcohol

09 Extract values - water and alcohol

10 TLC

11 Determination of Optical density

12 Refractive Index

13 Aflatoxins

14 Limit tests for Heavy metals

15 pH Value estimation

b. Tablets

01 Uniformity in weight and size

02 Tablet hardness

03 Tablet friability

04 Tablet disintegration

05 Tablet dissolution

c. Semisolid dosage forms

a. Moisture content

b. Sugar content

c. Microbail load

d. Liquids pH value

• Specific gravity

• Determination of refractive index

- Acid value
- Viscosity
- Saponification value
- Iodine value

Note:

- All practicals should be performed in accordance with Authoritative Text Books of Schedule-I of D.C.Act-1940.
- All practicals related to Pharmacopoeial Standards should be performed in accordance with Methods Published in Protocol for testing of ASU Medicines and Laboratory Guidelines for the Analysis of Ayurveda & Siddha Formulations published by Deptt. of AYUSH, Government of India.

Distribution of marks (Practical) :

01	Practical Record Book	- 10 Marks
02	Practicals related to Preparation of Drugs	
	A. Major practical- one	- 20 Marks
	B. Minor practical- one	-10 Marks
03	Drug analysis	
	A. Major practical- one	-20 Marks
	B. Minor practical- one	-10 Marks
04	Spotting	-10 Marks
05	Viva-voce	- 20 Marks

Format of Question Paper

PART -A

Q. No.	Nature of Questions	Division of Marks	Total Marks
1	L.A.Q.	15x2	30 Marks
2	S.A.Q. Attempt any 4 out of 5	5x4	20 Marks
		Total	50 Marks

PART-B

Q. No.	Nature of Questions	Division of Marks	Total Marks
1	L.A.Q.	15x2	30 Marks
2	S.A.Q. Attempt any 4 out of 5	5x4	20 Marks
		Total	50 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. Bharat Bhaishajya Ratnakara
18. Rasayoga Sagara
19. Siddha Bhaishajya Manimala
20. Sahasrayoga
21. Siddha Yoga Sangraha – Yadavaji Trikamji Acharya
22. Vaidyaka Paribhasha Pradeepa

23. Ayurvediya Aushadhikarana – Puranik and Dhamanakar
24. Dravyaguna Vijnan Part - 1 and 2 - Yadavji Trikamji
25. Chakradatta - Ratnaprabha, Relevant Parts from Charaka Samhita, Sushruta Samhita, Kashyapa Samhita, Ashtanga Sangraha, Ashtanga Hridaya,
26. Remington: Science and Practice of Pharmacy
27. Theory and Practice of Industrial Pharmacy – Leon Lachman *et al*
28. Clinical Pharmacology, KD Tripathi
29. Clinical Pharmacology, Lawrence Benette
30. Drug Discovery and Evaluation (Pharmacological assays) HG Vogel
31. Pharmacological Basis of therapeutics – Goodman and Gilman
32. Data Base of Medicinal Plants of CCRAS
33. Quality and Standards of Medicinal Plants – ICMR publication
34. Quality Control of Ayurvedic Drugs – PLIM, Gaziabad
35. Ayurvedic Pharmacopeia of India
36. Ayurvedic Formulary of India
37. Indian Pharmacopeia
38. British Pharmacopeia
39. United States Pharmacopeia
40. Pharmacopeia Codex
41. Current Good Manufacturing Practices
42. Drugs and Cosmetic Act 1940 and Rules 1945 with latest amendments
43. Drugs and Magic remedies (Objectionable advertisement) Act-1954
44. Prevention of Food Adulteration (PFA) act
45. Laws pertaining to Narcotics
46. Factory and Pharmacy Acts
47. Consumer Protection Act -1986
48. Brief information on the peer reviewed journals, official websites and other official search engines along with their links (related with the subject)
49. Rutleys Elements of Mineralogy
50. Bhasma Vigyaniam
51. Kupipakva Vigyaniam
52. Anupana Manjari
