

**Syllabus for descriptive type Subject Aptitude Test (SAT) for recruitment to post of Lecturer (Ras-Shastra & Bhaishajya Kalpana) Class-I (Gazetted) in the AYUSH Vibhag, H.P. The descriptive SAT paper shall have two parts, i.e. Part-I and Part-II of 03 hours duration having 120 Marks.**

### **PART-I (60 MARKS)**

#### **1. RASA SHASTRA:-**

History and chronological evolution of Rasashastra, concept of Raseshwara darshan, Fundamental Principles of Rasashastra Technical terminologies (Paribhasha) used in Rasa shastra, Detailed knowledge of ancient and coentemporary Yantropakarana and their accessories used in aushadhikaran and their contemporary 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, 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, Concept of Bhavana, Study of Mardana and its significance and knowledge of ancient and contemporary grinding techniques.

2. Detailed knowledge of different procedures of Shodhana, JaranaMurchana and Marana, concept of Puta, definition, types and specifications of different Putas, Significance of different Putas in relation to Bhasmikanana and therapeutic efficacy of dravya under process, Bhasmaparikshavidhi and its significance in relation to contemporary testing procedures, Amritkaran and Lohitkaran, Detailed knowledge of Satva and Druti, Satvashodhan, mrudukaran and maran of Satva, its significance, in relation to therapeutic efficacy of dravya under process, concept of Pratinidhidravya and discussion on controversial drugs. **Introduction to advance instruments of analysis like XRD, XRF, SEM-E-Dax, ICP analysis, Chromatography: TLC, Gas chromatography, HPTLC**

3. Detailed ancient and contemporary knowledge of Parada and its compounds with reference to source, occurrence, physic-chemical characterization, graahyaagraahyatva, Parada dosha, Parada gati, Parada shodhan, Sutdy of Ashtasanskara, ashtadashasanskara etc., Hingulottha Parada, Concept of Parada Jaran, Moorccana, bandhan, pakshaccheda and marana etc. Therapeutic properties and uses of Parada, Detailed ancient & contemporary knowledge with Geochemical/ mineralogical/ biological identification, source, occurrence, physic-chemical characterization, graahya-agraahyatva, ShodhanMaranavidhi and therapeutic properties and uses of dravyas etc. included in Maharasa, Uparasa, Sadharana rasa, Dhatu, Upadhatu, Ratna,

Uparatna, Visha, Upavisha, Sudha varga, Lavanavarga, Ksharavarga, Sikatavarga and other miscellaneous drugs used in Rasashastra, Detailed knowledge of manufacturing, pharmacopeial standards, storage, shelf life, therapeutic efficacy, dose, anupana, vikarashantiupaya and development of technology with Standard Operating Procedures of processing, standardization, quality control of Bhasmas and Pishtis, **Bhasma**-AbhrakaBhasma, SvarnamakshikaBhasma, KasisBhasma, SvarnaBhasma, RajataBhasma, TamraBhasma, LohaBhasma, MandurBhasma, Naga Bhasma, VangaBhasma, YashedBhasma, TrivangaBhasma, PittalaBhasma, Kamsya and VarthalohaBhasma, ShankhaBhasma, ShuktiBhasma, KapardikaBhasma, GodantiBhasma, PravalBhasma, MrigashringaBhasma, MayurpicchaBhasma, KukkutandtwakBhasma, HirakaBhasma, ManikyaBhasma, Dravaka-ShankhaDravaka, Pishti- PraalPishti, ManikyaPishti, Mukta Pishti, JaharaMoharapishti, Trinakantamanipishti etc., 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 Pottal rasa, Study of classical texts with respective commentaries and special emphasis on Rasarnava, Rasahridaya tantra, Rasa RatnaSamucchaya, Rasendra Chintamani, RasendraChudamani, Rasa Ratnakara, Rasadhyaya, Rasa Kamdhenu, Anandkanda, Siddha BhesajaManimala, Ayurveda Prakash, Rasatarangini, Bhaishajya Ratnavali, Rasamritam etc.

4. **Bhaishajya Kalpana**-History and chronological evolution of Bhaishajya Kalpana, Concept of Bhesaja and Aushadh, Fundamental principles of Bhaishajya Kalpana, Technical terminologies (Paribhasha) used in Bhaishajya Kalpana, Classical and contemporary concepts of Collection, Storage, SaviryataAvadhi and preservation methods of different fresh and dry Aushadhidravayas and their graahyaagraahyatva, Detailed knowledge of routes of drug administration, Aushadhamatra, Anupana, Sahapana, AushadhaSevana Kala, Kala Avadhi, Pathya, Apathya (Posology), 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, Panchavidha Kashaya, Churna, Rasakriya, Ghana, Avaleha, Pramathya, Mantha, Panaka, Sarkara, Kshirapaka, Ushnodaka, Aushadha Siddha Udaka, Sadangodaka, Tandulodaka, Laksharasa, Arka, Satva, Kshara, Lavana, Masi, Gutika, Vatika, Modaka, Guggulu and Varti etc., Sneha Kalpna: Concept of acchasneha and snehapravicharana and Murchhana, Sneha paka, types of snehapaka and sneha siddhi lakshana, Avartana, Sneha kalpakarmukata (Pharmacokinetics and dynamics of snehakalpa), Role of Sneha in relation to absorption of

drug, Kritanna and Bhashajya Siddha Anna Kalpana, Aharopayogivarga, concept of medicinal and functional food, dietary supplements and nutraceuticals etc., Sandhanakalpana: Madya varga and Shuktavarga, Asava yoni, Alcoholic and acidic fermentation, Sandhanakalpakarmukata (Pharmacokinetics and dynamics), Advancements in fermentation technology, Knowledge of regulations in relation to alcoholic drug preparations, BahyaPrayogarthas Kalpana: Lepa, Upanaha, Udvartan, Avachurnana/Avadhulana, Abhyanga, DhupanaMalahara, Mukha, Karna, Nasa, Netropacharartha Kalpana, Basti Kalpana: Basti Yantra Nirmana, Types of Basti, Anuvasana and Asthapanabasti, Karma, kala and yoga basti etc. Basti Kalpa (Madhutailika, Picchabasti etc.) Comparison of Asthapanana and Anuvasanabasti with evacuation and retention enema.

5. All the procedures which are studied in relevance to Ayurvedic Bhashajya Kalpas, Methods of Expression and Extraction: Maceration, percolation, distillation, infusion and decoction, Liquids: clarified liquid, syrup, elixir, filtration techniques, 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, Semisolid dosage forms, emulsions, suspensions, creams and ointments, sterilization of ophthalmic preparations, An introduction to various cosmetic preparations, Drying, open and closed air drying, freeze drying, vacuum drying and other drying methods pharmaceutical excipients, Study of classical texts with special emphasis on Chakradatta, Sharangadhara Samhita, Bhashajya Ratnavali, Bhava Prakasha, Yogaratnakara, relevant portions of Brihatrayi, Ayurvedic Pharmacopeia of India, Ayurvedic Formulary of India. **Concept of Nanotechnology and its relevance to Aushadha-Nirman.**

**Pharmacy Management: Concept of Rasashala, Rasa Mandapa with introduction to pharmacy in accordance with the Good Manufacturing Practices (GMP).** Scope and evolution of pharmacy, information resources in pharmacy and pharmaceutical science, pharmaceutical dosage form design (pre-formulation), packaging materials and labeling, Management of pharmacy, store and inventory management, personnel management, good manufacturing practices related to Ayurvedic drug industry, Pharmaceutical marketing, product release and withdrawals, Hospital, dispensing and community pharmacy, patenting and intellectual property rights, laws governing Ayurvedic drugs, Relevant regulatory provisions of Ayurvedic drugs in Drug and Cosmetics Act-1940 and Rules 1945, Laws pertaining to Drugs and magic remedies (Objectionable Advertisement) Act 1954, Prevention of Food Adulteration (PFA) Act, Food Standards and Safety Act-2006, Laws pertaining to

Narcotics, Factory Affairs related to International Trade and Practices of Ayurvedic Drugs, Introduction to Ayurvedic Pharmacopoeia of India, Ayurvedic Formulary of India, Introduction to Indian Pharmacopoeia, British and United States Pharmacopoeia, Pharmacopoeial codex, Introduction of Traditional Knowledge Digital Library. **Introduction to databases of medicinal plants published by CCRAS, ICMR and others.**

### **PART-II (60 MARKS)**

1. **Rasa Chikitsa & Aushadha Yoga Vigyana:** Rasachikitsa, Kshetrikaran, Rasajirna, Lohajirna, Aushadhi Sevana Vikarashanti Upaya, Ashuddha, Apakva, Avidhi Rasadravya Sevanajanya Vikara evam Vikara shanty upaya, Detailed knowledge of Aushadhipatha 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 Aushadhiyogas: **Kharaliya Rasa:** Shwasakuthara Rasa, Tribhuvanakirti Rasa, Higuleshwara Rasa, Ananda bhairava Rasa, MahaLakshmilasa Rasa, VasnataKusumakara Rasa, VasantaMalti Rasa, Brihatvatachintamani Rasa, LaghuSutashekhar Rasa, Sutashekhar Rasa, Ram ban Rasa, Chandra Kala Rasa, Yogendra Rasa, Hridyarnava Rasa, GrahaniKapta Rasa, Garbha Pala Rasa, Jalodarari Rasa, Mrityunjaya Rasa, Madhumalinivasanta Rasa, ArshaKuthara Rasa, Krimimudgara Rasa, Suchikabharana Rasa, Tri Netra Rasa, Smrutisagara Rasa, Vatagajankusha Rasa, Agni Kumar Rasa, Agni Kumar Rasa, Ekangavir Rasa, Kama dughha Rasa, PurnaChandrodaya Rasa, Pratap lankeshwara Rasa, Mahavatavidhwansaka Rasa, Kasturi Bhairava Rasa, AshwaKanchuki Rasa, Gulmakuthara Rasa, Mahajwarankusha Rasa, Chandra mrita Rasa, Kaphaketu Rasa, PrabhakaraVati, PravalaPanchamrita, GandhakaRasayana, Chaturbhuj Rasa, Navajivan Rasa, Shonitargal Rasa, RaktapittaKulakandan Rasa, Amavatari Rasa, Kravyada Rasa, Pradarantaka Rasa, Vangeshwara rasa, Brihatvangeshwara Rasa, Shwasakasa Chintamani Rasa, Arogya vardhiniVati. Chandra Prabha Vati, Agni Tundivati, ShankhaVati, **Kupipakva Rasa:** Rasa Sindura, Makaradhwaja, Sidhamakaradhwaja, Samira pannagaSwarnavanga, MallaSindura, Rasa karpura, Rasa pushpa, Manikya Rasa, **Parpati Rasa:** Rasa Parpati, LohaParpati, TamraParpati, SuwarnaParpati, GaganaParpati, Vijay Parpati, PanchamritParpati, ShwetParpati, Bola Parpati, **Pottali Rasa:** Rasagarbhapottali, Hemagarbhapottali, Mallagarbhapottali, Hiranyagarbha pottali, Shankagarbhapottali, Lokanatha rasa, Mrigankapottali, **LohaevamManduraKalpa:** Ayaskriti, LohaRasayana, AmlaPittantakaloha, Chandanadiloha, Dhatriलोha, Navayasaloha, Putapakvavishamajwarantakaloha, Shilajatwadiloha, Tapyadiloha, Saptamritलोha, DhatriलोhaAmritasaraलोha, Shankaramatलोha,

Pradarantakaloha, Rohitakaloha, PunarnavaMandura, ShatavariMandura, Tara Mandura, TriphalaMandura, ManduraVataka etc.

2. Detailed knowledge of AushadhipathaNischiti 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 Aushadhiyogas, **Panchavidhakashayas and their Upakalpa:**Ardrakaswarasa, Tulasiswarasa, Vasa putapakaswarasa, Nimbakalka, Rasonakalka, KulatthaKwath, Punarnavasthakakwatha, Rasnasaptakakwatha, Dhanyakhima, Sarivadihima, Panchakolaphanta, Tandulodaka, Mustadipramathya, kharjuradimantha, Shadangapaniya, Laksha rasa, Arjuna kshirapaka, Rasonakshirapaka, Chinchapanaka, Candanapanaka, Banapshasharkara, NimbuSharkara, Amrita Satva, Ardrakasatva, Ajamodaarka, Yavanyadiarka, **Kritanna and Bheshaja Siddha Ahara Kalpana:**Yavagu, (Krita and Akrita), Ashtagunamanda, Lajamanda, Peya, Vilepi, Krishara, Yusha, Mudgayusha, Kulatthayusha, Saptamushtikayusha, Khada, Kambalika, Raga, Shadava, Mamsarasa, Veshavara, Dadhi, KatvarDadhi, DadhiMastu, Takra, Ghola, Udasvita, Mathita, Chhacchika etc.
3. **Churna:**SitopaladiChurna, TalisadiChurna, TriphalaChurna, HingvashtakaChurna, AvipattikaraChurna, SwadishtaVirechanaChurna, Bhaskar LavanaChurna, SudarshanaChurna, MahaSudarshanaChurna, GandharvaHaritakiChurna, PushyanugaChurna, AjamodadiChurna, HingvadiChurna, EladiChurna, DadimashtakaChurna, TrikatuChurna, VaishwanaraChurna, Gangadhara Churna, JatiPhaladiChurna, Narayana Churna etc., **Gutika:** Arogya vardhanivati, Chandra prabhavati, ChitrakadiGutika, SanjivaniVati, Lasunandivati, Lavandagivati, Vyoshadivati, Khadiradivati, Kankayanavati, Abhayadimodaka, Marichyadigutika, Amalakyadigutika, Samshaminivati, Kutaja Ghana vati, Amarasundarivati, Shiva Gutika, Eladivati, KasturyadiGutika, ArshoghniVati, **Guggulu:**YogarajaGuggulu, MahayogarajaGuggulu, TrayodashangaGuggulu, KanchanaraGuggulu, RasnadiGuggulu, TriphalaGuggulu, SimhanadaGuggulu, GokshuradiGuggulu, KaishoraGuggulu, PnachatiktaGuggulu, AmritadiGuggulu, VatariGuggulu, LakshadiGuggulu, AbhaGuggulu, NavakaGuggulu, Nava KarshikaGuggulu.
4. **Sneha Kalpa:** Sneha Moorchhana: GhritaMurchhana, TailaMurchhana, **Siddha Ghrita:**ShatavariGhrita, JatyadiGhrita, PhalaGhrita, DadimadiGhrita, KshirashatpalaGhrita, MahatriphalaGhrita, DhanvantariGhrita, AmritaprashaGhrita, KalyanakaGhrita, Brahmi Ghrita, ChangeriGhrita, PanchatiktaGhrita, SukumaraGhrita, PanchagavyaGhrita., **Siddha Taila:**Maha Narayana Taila, Maha Masha Taila, BalalTaila, NirgundiTaila, ShadbinduTaila, VishagarbhaTaila, SahacharadiTaila, JatyadiTaila, ApamargaKsharaTaila, TuvarkaTaila,

KshirabalaTaila (Avartita), LakshadiTaila, Anu Taila, KumkumadiTaila, HingutrigunaTaila, KottumchukadiTaila, PrasarinyadiTaila, DhanwantariTaila, BalashwagandhadiTaila, BalaguduchyadiTaila, NilibhringyadiTaila, BrihadavadiTaila, IrimedadiTaila, ChandandiTaila, PanchagunaTaila, Arkataila, PindaTaila, KasisadyaTaila, **Rasakriya, Avaleha, Khanda etc.:** DarviRasakriya, Vasa Avaleha, Brahma Rasayana, ChyavanprashaAvaleha, KushmandaAvaleha, DadimaAvaleha, BilvadiAvaleha, Kantakaryavleha, Haridra Khanda, Narikela Khanda, SaubhagyaShunthipaka, Amrita Bhallataka, Kamsa Haritaki, ChitrakaHaritaki, VyaghriHaritaki, BahushalaGuda, KalyanaGuda, **SandhanaKalpa:** Lodhrasava, Kumaryasava, Ushirasava, Chandanasava, Kanakasava, Sarivadyasava, Pippalyasava, Lohasava, Vasakasava, Kutajarishta, Draksharishta, Raktamitraka, Dashamularishta, Abhayarishta, Amirtarishta, Ashokarishta, Sarasvatarishta, Arjunarishta, Khadirarishta, Ashwagandha Arishta, Vidangarishta, Takarishta, Mahadrakshasava, Mritasanjivanisura, Maireya, Varuni, Sidhu, Kanji, Dhanyamla, Madhu Shukta, Pindasava, **Any Kalpa:** Phalavarti, Chandrodayavarti, Arkalavana, Narikelalavana, Triphalamasi, Apamargakshara, Snuhikshara, Ksharasutra, Atasiupanaha, Sarjarasamalahara, Gandhakamalahara, SindhuradiMalahara, ShatadhoutaGhrita, SahasraDhoutaGhrita, Sikthataila, Dashangalepa, Doshaghnalepa, Bhallatakataila patina, JotishmatiTaila, BakuchiTaila, Dashangadhupa, Arshoghnadhupa, Nishadi Netra bindu, Madhutailika Basti, Piccha Basti, Yapana Basti.

- 5. Pharmacology:** General Pharmacology: Principles of Pharmacology, Pharmacodynamics & Pharmacokinetics: absorption, distribution, Metabolism & excretion, mechanism of action, dose determination and dose response, structure activity relationship, routes of drug administration, Factors modifying drug effect, bioavailability and bioequivalence, drug interactions, adverse drug reaction and drug toxicity, Preclinical evaluation: experimental pharmacology (bioassay, in vitro, in vivo, cell line studies) animal ethics, Clinical Pharmacology: Evaluation of new Chemical Entity- Phases and methods of clinical research, ethics involved in human research, Elemental constituents of human body and its physiological importance, deficiencies and excess of various elements (Micro-nutrients), Toxicity of heavy metals and chelation therapy, knowledge of toxicity and Pharmacological activities of herbo-mineral compounds, detailed knowledge of pharmacovigilance-National and International scenario, pharmacovigilance of Ayurvedic Drugs.