Annexure-II

SUPPLEMENTAL NOTIFICATION 14/2022 TO NOTIFICATION 14/2021

SCHEME AND SYLLABUS FOR THE POST OF LECTURER / ASSISTANT PROFESSOR (AYURVEDA)) IN DR.NRS GAC IN AYUSH DEPARTMENT

WRITTEN EXAMINATION (OBJECTIVE TYPE)				
PAPER	**Subject**	**No. Of Questions**	**Duration in Minutes**	**Maximum Marks**
Paper - I	General Studies & Mental Ability (Degree Standard)	150	150	150
Paper - II	Concerned Subject(AYURVEDA) (P.G Standard)	150	150	300
			Total	450

N.B: 1. As per G.O.Ms. No.235 Finance (HR-1, Plg & Policy) Dept, Dt: 06/12/2016, for each wrong answer will be penalized with 1/3rd of the marks prescribed for the question in all Objective type papers.

2. Medium of Examination will be English only.

SYLLABUS

PAPER-I: GENERAL STUDIES AND MENTAL ABILITY

1. Events of national and international importance.
2. Current affairs- international, national and regional.
3. General Science and it applications to the day to day life Contemporary developments in Science & Technology and information Technology.
4. Social- economic and political history of modern India with emphasis on Andhra Pradesh. (**Starts from 1707 AD**)
5. Indian polity and governance: constitutional issues, public policy, reforms and e-governance initiatives with specific reference to Andhra Pradesh.
6. Economic development in India since independence with emphasis on Andhra Pradesh.
7. Physical geography of Indian sub-continent and Andhra Pradesh.
8. Disaster management: vulnerability profile, prevention and mitigation strategies, Application of Remote Sensing and GIS in the assessment of Disaster.
9. Sustainable Development and Environmental Protection
10. Logical reasoning, analytical ability and data interpretation.
11. Data Analysis:
    a) Tabulation of data
    b) Visual representation of data
    c) Basic data analysis (Summary Statistics such as mean, median, mode, variance and coefficient of variation) and Interpretation
12. Bifurcation of Andhra Pradesh and its Administrative, Economic, Social, Cultural, Political, and Legal implications/problems.

SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR / LECTURER (AYURVEDA)

Paper - II

SAMHITHA SIDHANTHA

I. Maulik Siddhant avum Ashtanci Hridava

(Basic Principles and Ashtang Hridava)

1.Ashtang Hridaya Sutrasthana Adhyaya 1 to 30
2.Description of Ashta Prakriti
3.Shastra Lakshan (Tantra), Tantraguna, Tantradosha, Tachitalya, Arthasraya, Kalpana

II. PADARTHA VIGYAN EVUM AYURVEDA ITIHAS

(Philosophy and History of Ayurveda)

1.Ayurveda Nirupana:- Lakshana of Ayu, composition of Ayu.. Lakshana of Ayurveda. Lakshana and classification of Siddhanta. introduction to basic principles of Ayurveda and their significance.

2. Ayurveda Darshana Nirupana:- Philosophical background of fundamentals of Ayurveda. Etymological derivation of the word "Darshana". Classification and general introduction to schools of Indian Philosophy with an emphasis on: Nyaya, Vaisheshika, Sankhya and Yoga. Ayurveda as unique and independent school of thought (philosophical individuality **of** Ayurveda).

Padartha: Lakshana, enumeration and classification, Bhava and Abhava padartha, Padartha according to Charaka (Karana-Padartha).

3. Dravya Vigyaniyam:-

Dravya: Lakshana, classification and enumeration.

Panchabhuta: Various theories regarding the creation (theories of Taittiriyopanishad, Nyaya-Vaisheshika, Sankhya-Yoga, Sankaracharya, Charaka and Susruta), Lakshana and qualities of each Bhoota.

Kaala: Etymological derivation, Lakshana and division / units, significance in Ayurveda.

Dik: Lakshana and division, significance in Ayurveda. Atma:Lakshana, classification, seat, Gunas, Linga according to Charaka, the method / process of knowledge formation *(atmanah jnasya pravrittih)*.

Purusha: as mentioned in Ayurveda - Ativahikapurusha/ Sukshmasharira/ Rashipurusha/ Chikitsapurusha/ Karmapurusha/ Shaddhatvatmakapurusha.

Manas: Lakshana, synonyms, qualities, objects, functions, dual nature of mind *(ubhayaatmakatvam),* as a substratum of diseases, penta-elemental nature *(panchabhutatmakaivam)* Role of Panchamahabhuta and Triguna in Dehaprakriti and Manasaprakriti respectively. Tamas as the tenth Dravya. Practical study/application in Ayurveda.

4. Gunavigyaniyam:- Etymological derivation, classification and enumeration according to Nyaya- Vaisheshika and Charaka, Artha, Gurvadiguna, Paradiguna, Adhyatmaguna. Lakshana and classification of all the 41 gunas. Practical / clinical application in Ayurveda.

5. Karma Vigyaniyam:- Lakshana, classification in Nyaya. Description according to Ayurveda. Practical study/ application in Ayurveda.

6. Samanya Vigyaniyam:- Lakshana, classification. Practical study/ application with reference to Dravya, Guna and Karma.

7. Vishesha Vigyaniyam:- Lakshana, classification. Practical study/ application with reference to Dravya, Guna and Karma. Significance of the statement "*Pravrittirubhayasya tu*".

8. Samavaya Vigyaniyam:- Lakshana Practical study /clinical application in Ayurveda.

9. Abhava Vigyaniyam:- Lakshana, classification Clinical significances in Ayurveda.

10 Pramana/ Pariksha- Vigyaniyam

Pariksha:- Definition, significance, necessity and use of *Pariksha.* Definition of *Prama, Prameya, Pramata, Pramana.* Significance and importance of *Pramana,* Enumeration of *Pramana* according to different schools of philosophy. Four types of methods for examination in *Ayurveda* (Chaturvidha-Parikshavidhi),*Pramana* in Ayurveda. Subsudation of different *Pramanas* under three *Pramanas.* Practical application of methods of examination (Parikshavidhi) in treatment (Chikitsa).

Aptopdesha Pariksha/ Pramana:- Lakshana of Aptopadesha, Lakshana of Apta. Lakshana of Shabda, and its types. Shabdavritti-Abhidha, Lakshana, Vyanjana and Tatparyakhya.

Shaktigrahahetu. Vaakya: Characteristics, Vaakyarthagyanahetu- Aakanksha, Yogyata, Sannidhi.

Pratyaksha Pariksha/ Pramana:- Lakshana of Pratyaksha, types of Pratyaksha- Nirvikalpaka- Savikalpaka with description, description of Laukika and Alaukika types and their further classification. Indriya-prapyakaritvam, six types of Sannikarsha. Indriyanam lakshanam, classification and enumeration of Indriya. Description of Panchapanchaka, Penta-elemental nature of Indriya by Panchamahabhuta *(Panchabhautikatwa* of Indriya) and similarity in sources *(Tulyayonitva)* of Indriya. Trayodasha Karana, dominance of Antahkaran. Hindrances in direct perception *(pratyaksha-anupalabdhikaaran),* enhancement of direct perception (Pratyaksha) by various instruments/ equipments, necessity of other Pramanas in addition to Pratyaksha. Practical study/ application of Pratyaksha in physiological, diagnostic, therapeutics and research grounds.

Anumanapariksha/Pramana:- Lakshana of Anumana. Introduction of Anumiti, Paramarsha, Vyapti, Hetu, Sadhya, Paksha, Drishtanta. Types of Anumana mentioned by Charaka and Nyayadarshana. Characteristic and types of Vyapti. Lakshana and types of Hetu, description of Ahetu and Hetwabhasa. Characteristic and significance of Tarka. Practical study/ application of Anumanapramana in physiological,diagnostic, therapeutics and research.

Yuktipariksha/ Pramana:- Lakshana and discussion. Importance in Ayurveda. Practical study and utility in therapeutics and research

Upamana Pramana;- Lakshana and Application in therapeutics and research.

Karya- Karana Siddhanta (Cause and Effect Theory):- Lakshana of Karya and Karana. Types of Karana. Significance of Karya and Karana in Ayurveda. Different opinions regarding the manifestation of Karya from Karana:Satkaryavada, Asatkaryavada, Parinamavada, Arambhavada, Paramanuvada, Vivartavada, Kshanabhangurvada, Swabhavavada, Pilupaka, Pitharpaka, Anekantavada, Swabhavoparamavada.

11. Ayurved Itihas

Etymological derivation (Vyutpatti), syntactical derivation (Niruktti) and definition of the word Itihas, necessity of knowledge of history, its significance and utility, means and method of history, historical person (Vyakti), subject (Vishaya), time period (Kaal), happening (Ghatana) and their impact on Ayurveda.

Introduction to the authors of classical texts during Samhitakaal and their contribution: Atreya, Dhanwantari, Kashyapa, Agnivesha, Sushruta, Bhela, Harita, Charaka, Dridhabala, Vagbhata, Nagarjuna, Jivaka.

Introduction to the commentators of classical Samhitas - Bhattarahariccchandra, Jejjata, Chakrapani, Daihana, Nishchalakara, Vljayarakshita, Gayadas, Arunadutta, Hemadri, Gangadhara, Yogindranath Sen, Haranachandra, Indu.

Introduction to the authors of compendiums (Granthasamgrahakaala) - Bhavmishra, Sharngadhara, Vrinda, Madhavakara, Shodhala, Govinda Das (Author of Bhaishajyaratnawali), Basavraja.

Introduction to the authors of Modern era -Gana Nath Sen, Yamini Bhushan Rai, Shankar Dajishastri Pade, Swami Lakshmiram, Yadavji Tikramji, Dr. **P.** M. Mehta, Ghanekar, Damodar Sharma Gaur, Priyavrat Sharma.

Globalization of Ayurveda - Expansion of Ayurveda in Misra (Egypt), Sri Lanka, Nepal other nations. Developmental activities in Ayurveda in the post-independence period, development in educational trends. Establishment of different committees, their recommendations.

Introduction to and activities of the following Organizations :- Department of AYUSH, Central Council **of** Indian Medicine, Central Council for Research in Ayurvedic Sciences, Ayurvedic Pharmacopeia commission, National Medicinal Plants Board, Traditional Knowledge Digital Library (TKDL)

Introduction to the following National Institutions :National Institute of Ayurved, Jaipur, IPGT&RA, Gujrat Ayurved University, Jamnagar, Faculty of Ayurved, BHU, Varanasi, Rashtriya Ayurveda Vidyapeetha, New Delhi. „ Drug and Cosmetic Act. Introduction to national & international popular journals of Ayurveda. Introduction to activities of WHO In the promotion of Ayurved.

III. CHARAKASAMHITA –PURVARDHA

1. Sutrasthana 2. Indriyasthana 3. Nidanasthana 4. Vimanasthana 5. Sharirasthana

IV.CHARAK SAMHITA- UTTARARDHA

1. Chikitsa sthana 2. Kalpa sthana 3. Siddhi sthana

V. Learning and Teaching methodology available in Samhita- Tantrayukti, Tantraguna, Tantradosha, Tachchilya, Vadamarga, Kalpana, Arthashraya, Trividha Gyanopaya, teaching of Pada, Paada, Shloka, Vakya, Vakyartha, meaning and scope of different Sthana and Chatushka of Brihatrayee.

1. Manuscript°logy - Collection, conservation, cataloguing, Critical editing through collation, receion (A critical revision of a text incorporating the most plausible elements found in varying sources), emendation (changes for improvement) and textual criticism (critical analysis) of manuscripts. Publication of edited manuscripts.
2. Concept of Bija chatustaya (Purush, Vyadhi, Kriyakaal, Aushadha according to Sushrut Samhita).
3. Introduction and Application of Nyaya (Maxims) - Like Shilaputrak Nyaya, Kapinjaladhikaran Nyaya, Ghunakshara Nyaya, Gobalivarda Nyaya, Naprishtah Guravo Vadanti Nyaya, Shringagrahika Nyaya, Chhatrino Gacchhanti Nyaya, Shatapatrabhedana Nyaya, Suchikatah Nyaya.
4. Importance and utility of Samhita in present era.
5. Importance of ethics and principles of ideal living as mentioned in Samhita in the present era in relation to life style disorders.
6. Interpretation and co-relation of basic principles with contemporary sciences.
7. Definition of Siddhanta, types and applied examples in Ayurveda.
8. Ayu and its components as described in Samhita.
9. Principles of Karana-Karyavada, its utility In advancement of research in Ayurveda.
10. Theory of Evolution of Universe (Srishti Utpatti), its process according to Ayurveda and Darshana.
11. Importance and utility of Triskandha (Hetu, Linga, Aushadh) and their need in teaching, research and clinical practice.
12. Applied aspects of various fundamental principles: Tridosha, Triguna, Purusha and Atmanirupana, Shatpadartha, Ahara-Vihara. Scope and importance of Pariksha (Pramana).
13. Importance of knowledge of Sharir Prakriti and Manas Prakriti.

14. Comparative study of Principles of Ayurveda and Shad Darshanas.

VI. Charak Samhita;- Charak Samhita complete with Ayurved Dipika commentary by Chakrapani. Introductory information regarding all available commentaries on Charak Samhita

Sushrut Samhlta & Ashtang-Hridayam:- Sushrut Samhita Sutra sthana and Sharir- sthana. with Nibandha Samgraha commentary by Acharya Dalhana. Ashtang-Hridayam Sutra Sthanamatram with Sarvanga Sundara commentary by Arun Dutt. Introductory information regarding all available commentaries on Sushrut Samhita and Ashtang Hridaya

Ayurvediya and Darshanika Siddhanta:- Introduction and description of philosophical principles incorporated in Charak Samhita, Sushrut Samhita, Ashtanga Hridya, shtang Samgraha. Analysis of principles specially loka-purusha samya, Shadpadartha, Praman, Srishti Utpatti, Panchmahabhuta,Pilupaka, Pitharpaka Karana-Karyavada, Tantrayukti, Nyayas (Maxims), Atmatatva siddhant. Importance of Satkaryavad, Arambhavada, Parmanuvada Swabhavoparamvada, Swabhava Vada, Yadricha Vada, Karmvada. Practical applicability principles of Samkhya- Yoga, Nyaya-Vaisheshika, Vedanta and Mimansa.

Ayurved Itihas and Prayogika Siddhant :- Post independent Development of Ayurveda: Education, Research. Globalisation of Ayurved. Introduction of department of AYUSH, CCIM, CCRAS, RAV. Tridosh Siddhant. Panchabhautik Siddhant Manastatva and its Chikitsa Siddhant. Naishthiki Chikitsa. Practical applicability principles of Charvak, Jain & Bauddha Darshana. Journals, types of Journals review of Articles.

RACHNA SHARIR
(ANATOMY)

Shariropkramaniya Shaarlra

Sharira and shaarira vyakhya (definitions of sharira and shaarira), shadangatvam (six regions of the body), anga pratyanga vibhaga (sub divisions). Mrita sharir samshodhan. Shaarira shastra vibhaga, shaarira gyan prayojana Constitution of purusha according to dhatubheda, panchabhautikatvam, trigunatmakatvam, tridoshamayatvam, karma purusha, and doshadhatumala-mulakatvam.

Paribhasha Shaarira

Kurcha, kandara, jala, **asthisanghat,** seemanta, seevani, rajju, snayu and lasika.

Garbha Shaarira

Garbha definitions, explanation of shukra, artava, garbhadhana. Role of tridosha and panchmahabhuta in the fetal development. Beeja, beejabhaga and beejabhagavayava, linga vinischaya, masanumasika garbha vriddhi-krama, garbhottpadakbhava, garbhavriddhikara bhava, garbha poshana, apara nirmana , nabhinadi nirmana. Aanga pratyanga utpatti

Pramana Shaarira: Anguli pramana.

Asthi Shaarira :- Asthi vyakhya, number, types, asthi swaroopa, vasa, meda and majja.

Sandhi Shaarira :- Sandhi vyakhya, numbers, types of asthi sandhi.

Sira, Dhamani, Srotas Shaarira :- Definition, types and number of sira and dhamani. Description of Hridaya Sroto shaarira: Definition, types of srotas and srotomula.

Peshi Shaarira :- Peshi vyakhya, structure, types, number and importance. Description of Peshi.

Koshtha Evam Ashaya Shaarira :- Definition of kostha and number of koshthanga. Types and description of ashaya.

Kalaa Shaarira :- Kalaa: definition and types.

Uttarnangiya Shaarira :- Shatchakra, Ida, pingala and sushumna nadi - brief description.
Marma Shaarira :- Marma: definition, number, location, classification, clinical importance with viddha lakshana. Explanation of trimarmas. Detail description of marmas.

indriya Shaarira :- Definition of indriya, indriya artha and indriya adhisthan, their number and importance. Description of gyanendria, karmendriya and ubhayendriya (manas).

Definition and branches of anatomy: - Preservation methods of the cadaver.

Anatomical Terminologies
Anatomical position, Planes, and explanation of anatomical terms related to skin, fasciae, bones, joints and their movements, muscles, ligaments, tendons, blood vessels, nerves,.

Embryology
Definitions and branches of embryology. Embryo and fetus. Sperm and ovum, fertilization. Cleavage. Germ layers formation and their derivatives. Laws of heredity, Sex determination and differentiation, Month-wise development of embryo. Foetal circulation, placenta formation, Umbilical cord formation.

Osteology
Bone: Definition, ossification, structure and types. Description of bones with clinical anatomy.

Arthrology
Joints: Definition, structure types and movements. Description of joints of extremities, vertebral joints and temporomandibular joint with their clinical anatomy.

Cardiovascular system:- Definition, types and structure of arteries and veins. Description of heart and blood vessels with their course and branches. Pericardium with applied aspect.

Lymphatic system :- Definition, types and structure of lymph vessels, lymph glands with their clinical aspect.

Myology :- Structure and types of muscles. Description of muscles; their origin, insertion, actions, nerve supply and clinical anatomy.

Respiratory System :- Bronchial tree and lungs with their clinical aspects. Respiratory tract: nasal cavity, pharynx, larynx, trachea, bronchial tree. Pleura with its clinical aspects. Diaphragm.

Digestive system :- Organs of digestive tract (alimentary tract) with their clinical aspects. Digestive glands: liver, spleen and pancreas. Description of peritoneum with its clinical aspects.

Urinary System :- Urinary tract: kidney, ureter, urinary bladder arid urethra with their clinical aspects.

Reproductive system :- Male Reproductive system: reproductive organs, tract and glands (prostate and seminal vesicles) with their clinical aspects. Female reproductive system: reproductive organs, tract and glands with their clinical aspects.

Endocrinology :- Definition, classification & description of endocrine glands (pituitary, thyroid, parathyroid, thymus and suprarenal glands) with clinical aspects.

Nervous System:- Nervous system: definition, classification and its importance. Description of brain and spinal cord. Description of peripheral nervous system: cranial and spinal nerves, nerve plexuses, and autonomic nervous system, formation and circulation of cerebrospinal fluid and blood supply of brain and spinal cord.

Sensory organs :- Description of structures of eye, ear, nose, tongue and skin with their clinical aspects.

Surface and radiological anatomy :- Study of radio-imaging of limbs, abdomen, pelvis and vertebral column with its clinical application. Surface anatomy of thoracic and abdominal viscera.

Basic principles of Sharira, Purushavichaya, Rashi Purusha, Karma Purusha (Shad Dhatuj Purusha), Chaturvimshati Purusha, Ek Dhatu Purusha. Relevant principles described in the Shariresthan of Sushrut Samhita, Charak Samhita, Ashtang Sangrah and Ashtang Hridaya. Basic principles of Garbha Sharira in Ayurveda: Defmitions of Garbha, Shukra Shonita Siddhanta, Dauhrida, Matrijadi Garbhotpattikar bhava.

Types of tissues, histological study of liver, spleen, uterus, kidney, endocrine glands, mammary gland, skin, tongue, lungs, bronchi, bones, muscles, cartilages and nervous tissue.

Paribhasha Sharira (Anatomical terminology) Pramana Sharira - Anguli and Anjali Pramana, Sama pramana Sharira, Ayama - Vistara and their prognostic values. Fundamental aspects of Asthi, Sandhi, Peshi Sharir. Fundamental aspects of Sirs, Dhamani, Srotas - Definitions, Siravedha, Avedhya Sira. Fundamental aspect of Srotomoola Sthana. Fundamental aspects of Koshtha and Koshthang: Hridaya, Yakrit, Vrikka, phuphphusa, Aantra, Pleeha, Adhivrikkagranthi, Basti, Paurushagranthi, Amashaya, Agnyashaya and Vrishana. Fundamental aspects of Uttamangiya Sharir - Introduction to Nervous system - development, divisions, neuron-structure, types, functiona anatomy. Mrita shodhan (as per Sushruta) and Mrita Samrakshana (preservation method of human cadaver).

GARBHA SHAARIRA :- Etymology of Garbhavakranti Shaarira, features of Shukra and Shonita, description of Beeja, Beejbhaga, Beejbhagavyava and Garbhotpadakabhava, Garbha Poshana Krama, Garbhavriddhikar Bhav, Masanumashiki Garbhavriddhi, Foetal circulation. Explanation of lakshana occurring in Ritumati, Sadhyah Grihita Garbha.

Yamal garbha, Anasthi garbha. Explanation of Basic Embryology, and Systemic embryology. Knowledge of basic facts in advancement in Anuvanshiki (Genetics) and Garbhajavikara (Teratology).

KOSHTHANGA SIRA DHAMANI SROTAS SHAARIR :- Koshthanga Shaarira: - Detail etymological derivation of 'Koshtha' and Koshthanga, including detail study of structure of each Koshthanga. Male and Female genital organs. Ashaya: - Definition, detail

description. Kala Shaarira:-Etymology, Definition, description of Seven Kala with their Modern component and applied aspe cts. Paribhashika Shaarira: - Snayu, Kandara, Rajju, Sanghata, Jalaetc. and their general description. Sira, Dhamani and Srotas Shaarira: - Etymological derivation, definitions, synonyms, number and types of Sira, Dhamani and Srotas, anatomical differences among Sira, Dhamani and Srotas, description of Vedhya and AvedhyaSira (Puncturable and Non puncturable Veins) and clinical importance of Sira, Dhamani and Srotas including Modern Anatomical counterparts.

Marma Shaarira Evum Asthi Sandhi Peshee ShaarIra :- Marma Shaarira:- Derivation and definitions of the term Marma and their features, characteristics and number of Marma according to Sushruta Divisions of Marma on morphological basis (Rachana Bheda), Shadangatvam (Regional), Abhighataja (Prognostic) classification, Trimarma according to Charaka. Knowledge of 'Marmaabhighata', MarmaViddha, Detailed study of individual marma with their clinical and Surgical importance. Importance of Marma in Shalyatantra. Asthi Shaarira :- General introduction and description of Asthi, differences among number of Asthi.Types of Asthi. Detail study of each bone with its ossification &Applied anatomy. Sandhi Shaarira Etymological derivation,description, features, number, types and Applied anatomy of all Sandhi (joints). Peshee Shaarira Etymological derivation,description, features, number, types and Applied anatomy of all Peshee (Muscles).

Tantra Shaarira Evum Antah and BahihGranthi Vigyaniya :- Description of Panchgyanendriya - Ayurved and Modem aspects. (Sensory organs (Eye, Ear, Nose, Tongue and Skin with their Applied anatomy). Shat Chakra - Location and significance in Yoga. Description of Ida, Pingala, Sushumnanadi. Anatomy of brain and spinal cord, Peripheral nervous system (explanation of Nerve Plexuses and peripheral nerves, Cranial nerves and Autonomic nervous system, Cerebro-spinal fluid, Venous sinuses of Brain, Ventricular system of Brain, Blood supply of Brain, Meninges with Applied Anatomy. AntahSraviGranthi and BahihSraviGranthi:-Detall study of Exocrine &Endocrine glands.

KRIYA SHARIR
PHYSIOLOGY

I. Conceptual study of fundamental principles of Ayurvediya Kriya Sharir e.g - Panchama habhuta, Tridosha, Triguna, Loka-Purusha Samya, Samanya-Vishesha. Description of basics of Srotas.

1. Definition and synonyms of the term Sharir, definition and synonyms of term Kriya, description of Sharir Dosha and Manasa Dosha. Mutual relationship between Triguna-Tridosha & Panchmahabhuta. Difference between Shaarir and Sharir. Description of the components of Purusha and classification of Purusha, rote of Shatdhatupurusha in Kriya Sharira and Chikitsa.
2. Dosha- General description of Tridosha. Inter relationship between Ritu-Dosha-Rasa-Guna. Biological rhythms of Tridosha on the basis of day-night-age-season and food intake. Role of Dosha in the formation of Prakriti of an individual and in maintaining of health. Prakrita and Vaikrita Dosha.

3. Vata Dosha: Vyutpatti (derivation), Nirukti (etymology) of the term Vata, general locations, general properties and general functions of Vata, five types of Vata (Prana, Udana, Samana, Vyana, Apana) with their specific locations, specific properties, and specific functions. Respiratory Physiology in Ayurveda, Physiology of speech in Ayurveda.

4. Pitta Dosha: Vyutpatti, Nirukti of the term Pitta, general locations, general properties and general functions of Pitta, five types of Pitta (Pachaka, Ranjaka, Alochaka, Bhrajaka, Sadhaka) with their specific locations, specific properties, and specific functions. Similarities and differences between Agni and Pitta.

5. Kapha Dosha: Vyutpatti, Nirukti of the term Kapha, general locations, general properties and general functions of Kapha, five types of Kapha (Bodhaka, Avalambaka, Kledaka, Tarpaka, Sleshaka) with their specific locations, specific properties, and specific functions.

6. Etiological factors responsible for Dosha Vriddhi, Dosha Kshaya and their manifestations.

7. Concept of Kriyakala.

8. Prakriti:- Deha- Prakriti: Vyutpatti, Nirukti, various definitions and synonyms for the term 'Prakriti'. Intrauterine and extra-uterine factors influencing Deha-Prakriti, classification and characteristic features of each kind of Deha-Prakriti. Manasa- Prakriti: Introduction and type of Manasa- Prakriti.

10. Ahara: Definition, classification and significance of Ahara, Ahara-vidhi-vidhana, Ashta Aharavidhi Viseshayatana, Ahara Parinamkar Bhava.

11. Aharapaka (Process of digestion): Description of Annavaha Srotas and their Mula. Role of Grahani & Pittadhara Kala.

12. Description of Avasthapaka (Madhura, Amla and Katu). Description of Nishthapaka (Vipaka) and its classification. Separation of Sara and Kitta. Absorption of Sara. Genesis of Vata-Pitta-Kapha during Aharapaka process. Definition of the term Koshtha. Classification of Koshtha and the characteristics of each type of Koshtha.

13. Agni — Definition and importance, synonyms, classification, location, properties and functions of Agni and functions of Jatharagni, Bhutagni, and Dhatvagni.

Modern Physiology:-

Definition and mechanisms of maintenance of homeostasis. Cell physiology. Membrane physiology. Transportation of various substances across cell membrane.

Resting membrane potential and action potential. Physiology of respiratory system: functional anatomy of respiratory system. Definition of ventilation, mechanism of respiration, exchange and transport of gases, neural and chemical control of respiration, artificial respiration, asphyxia, hypoxia. Introduction to Pulmonary Function Tests. Physiology of Nervous System: General introduction to nervous system, neurons, mechanism of propagation of nerve impulse, physiology of CNS, PNS, ANS; physiology of sensory and motor nervous system, Functions of different parts of brain and physiology of special senses, intelligence, memory, learning and motivation. Physiology of sleep and dreams, EEG. Physiology of speech and articulation. Physiology of temperature regulation. Functional anatomy of gastro-intestinal tract, mechanism of secretion **and** composition of different digestive juices. Functions of salivary glands, stomach, liver, pancreas, small intestine and large intestine in the process of digestion and absorption.

Movements of the gut (deglutition, peristalsis, defecation) and their control.. Enteric nervous system. Acid-base balance, water and electrolyte balance. Study of basic components of food. Digestion and metabolism of proteins, fats and carbohydrates. Vitamins & Minerals- sources, daily requirement, functions, manifestations of hypo and hypervitaminosis.

Dhatu:- Etymology, derivation, definition, general introduction of term Dhatu, different theories related to Dhatuposhana (Dhatuposhana Nyaya)

Rasa Dhatu:

Etymology, derivation, location, properties, functions and Praman of Rasa-dhatu. Physiology of Rasavaha Srotas, Formation of Rasa Dhatu from Aahara Rasa, circulation of Rasa (Rasa-Samvahana), role of Vyana Vayu and Samana Vayu in Rasa Samvahana. Description of functioning of Hridaya. Ashtavidha Sara (8 types of Sara), characteristics of Tvakasara Purusha, conceptual study of mutual interdependence (Aashraya-Aashrayi Bhaava) and its relation to Rasa and Kapha. Manifestations of kshaya and Vriddhi of Rasa.

Rakta Dhatu:
Etymology, derivation, synonyms, location, properties, functions and Praman of Rakta Dhatu. Panchabhautikatva of Rakta Dhatu, physiology of Raktavaha Srotas, formation of Raktadhatu, Ranjana of Rasa by Ranjaka Pitta, features of Shuddha Rakta, specific functions of Rakta, characteristics of Raktasara Purusha, manifestations of Kshaya and Vriddhi of Raktadhatu, mutual interdependence of Rakta and Pitta.

Mamsa Dhatu :
Etymology, derivation, synonyms, location, properties and functions of Mamsa Dhatu, physiology of Mamsavaha Srotasa, formation of Mamsa Dhatu, characteristics of Mamsasara Purusha, manifestations of Kshaya and Vriddhi of Mamsa Dhatu .Concept of Peshi.

Meda Dhatu
Etymology, derivation, location, properties, functions and Praman of Meda Dhatu, physiology of Medovaha Srotas, formation of Medo Dhatu, characteristics of Medasara Purusha and manifestations of Kshaya and Vriddhi of Meda.

Asthi Dhatu:
Etymology, derivation, synonyms, location, properties, functions of Asthi Dhatu. Number of Asthi. Physiology of Asthivaha Srotas and formation of Asthi Dhatu, characteristics of Asthisara Purusha, mutual interdependence of Vata and Asthi Dhatu, manifestations of Kshaya and Vriddhi of Asthi Dhatu.

Majja Dhatu :
Etymology, derivation, types, location, properties, functions and Praman of Majjaa Dhatu, physiology of Majjavaha Srotas, formation of Majja Dhatu, characteristics of Majja Sara Purusha, relation of Kapha, Pitta, Rakta and Majja, manifestations of Kshaya and Vriddhi of Majja Dhatu.

Shukra Dhatu:
Etymology, derivation, location, properties, functions and Praman of Shukra Dhatu, physiology of Shukraravaha Srotas and formation of Shukra Dhatu. Features of Shuddha Shukra, characteristics of Shukra-Sara Purusha, manifestations of Kshaya and Vriddhi of Shukra Dhatu.

Concept of **Ashraya-Ashrayi** bhava i.e. inter-relationship among Dosha, Dhatu Mala and Srotas.

Ojas: Etymological derivation, definition, formation, location, properties, Praman, classification and functions of Ojas. Description of Vyadhikshamatva Bala Vriddhikara Bhava. Classification of Bala. Etiological factors and manifestations of Ojavisramsa, Vyapat and Kshaya.

Upadhatu: General introduction, etymological derivation and definition of the term Upadhatu. Formation, nourishment, properties, location and functions of each Upadhatu. Stanya: Characteristic features and methods of assessing Shuddha and Dushita Stanya, manifestations of Vriddhi and Kshaya of Stanya. Artava: Characteristic features of Shuddha and Dushita Artava. Differences between Raja and Artava, physiology of Artavavaha Srotas. vak: classification, thickness of each layer and functions.

Mala: Etymological derivation and definition of the term Mala. Aharamala: Enumeration and description of the process of formation of Aharamala. Purisha: Etymological derivation, definition, formation, properties, quantity and functions of Purisha. Physiology of Purishavaha Srotas, manifestations of Vriddhi and Kshhaya of Purisha. Mutra: Etymological derivation, definition, formation, properties, quantity and functions of Mutra. Physiology of Mutravaha Srotas, physiology of urine formation in Ayurveda, manifestations of Vriddhi and Kshhaya of Mutra. Sveda: Etymological derivation, definition, formation and functions of Sveda. Manifestations of Vriddhi and Kshaya of Sveda. Discription of Svedvaha Strotas Dhatumala: Brief description of each type of Dhatumala.

Panchagyanendriya: Physiological description of Panchagyaanendriya and physiology of perception of Shabda, Sparsha, Rupa, Rasa and Gandha. Physiological description of Karmendriya.

Manas: Etymological derivation, definition, synonyms, location, properties, functions and objects of Manas. Physiology of Manovaha Srotas.

Atma: Etymological derivation, definition, properties of Atma. Difference between Paramatma and livatma; Characteristic features of existence of Atma in living body.

Jivatma: Characterstic features of existence of Atma in living body.

Nidra: Nidrotpatti, types of Nidra, physiological and clinical significance of Nidra; Svapnotpatti and types of Svapna.

Modern Physiology

Haemopoetic system - composition, functions of blood and blood cells, Haemopoiesis (stages and development of RBCs, and WBCs and platelets), composition and functions of bone marrow, structure, types and functions of haemoglobin, mechanism of blood clotting, anticoagulants, physiological basis of blood groups, plasma proteins, introduction to anaemia and jaundice. Immunity, classification of immunity: Innate, acquired and artificial. Different mechanisms involved in immunity: Humoral (B-cell mediated) and T-Cell mediated immunity. Hypersensitivity. Muscle physiology - comparison of physiology of skeletal muscles, cardiac muscles and smooth muscles. Physiology of muscle contraction. Physiology of cardio-vascular system: Functional anatomy of cardiovascular system. Cardiac cycle. Heart sounds. Regulation of cardiac output and venous return. Physiological basis of ECG. Heart-rate and its regulation. Arterial pulse. Systemic arterial blood pressure and its control. Adipose tissue, lipoproteins like VLDL, LDL and HDL triglycerides. Functions of skin, sweat glands and sebaceous glands.

Physiology of male and female reproductive systems. Description of ovulation, spermatogenesis, oogenesis, menstrual cycle. Physiology of Excretion - functional anatomy of urinary tract, functions of kidney. Mechanism of formation of urine, control of micturition. Formation of faeces and mechanism of defecation. Endocrine glands - General introduction to endocrine system, classification and characteristics of hormones, physiology of all endocrine glands, their functions and their effects.

Theory of Loka-Purusha Samya, Theory of Panchamahabhuta, Physiological aspects of Samanya — Vishesha siddhanta, Concepts of Tridosha and Triguna, Concept of Dhatu, Concept of Mala, Description of Ojas, Process of Ahara Parinama including Aharaparinamakara Bhava, Asta Ahara Vidhi Visesayatana, Physiological importance of Agni, its classification and functions, Dhatuposana theories, Concepts of Atma, Manas and Indriya, Concepts of Prakriti and Ashtavidha Sara. and Concept of Srotas

Description of essential and relevant understandings related to contemporary physiolOgy, both general physiology and systemic physiology.

Essentials of cell physiology — organization of cell, Membrane physiology- transport across cell membrane, action potentials and resting membrane potentials, Homeostasis- negative and positive feedback mechanisms, Genetic code, its expression and regulation of gene expression, Essentials of cardiovascular physiology- cardiac cycle, regulation of heart rate and blood pressure, Essentials of respiratory physiology- regulation of respiration- chemical and neural, gaseous exchange, transportation of gases, Gastrointestinal physiology- various digestive juices and their actions, gastrointestinal hormones, enteric nervous system, Nervous system physiology- ANS, somatic nervous system, reflexes, general and special sensations, higher mental functions, functions of brain, brainstem and spinal cord, Blood: Blood cells-RBCs, WBCs, platelets, plasma proteins and immunity, Muscle physiology: properties and mechanisms of contraction of skeletal, cardiac and smooth muscles. Physiology of excretion- mechanism of urine formation, micturition. Endocrine physiology: Classification of hormones, hormones secreted by pituitary, thyroid, parathyroid, adrenal glands, pineal, pancreas and their functions. Study of male and female reproductive system: functions of reproductive hormones.

(Dosa-Dhatu-Mala Vijfiana) Contribution of different Ayurveda Samhita in Kriya Sharir

Theory of PancamahabhOta, Principle of Loka-Purusa Samya, Importance of Samanya - Vigesa principle, Different views on the composition of Purusa and the importance of Cikitsya Purusa, Importance of Gurvadi Guna in Ayurveda, General description of Tridosa theory, Mutual relationship between Triguna-Tridosa rnhcamahabhata-Indriya, Mutual relationship between Rtu-Dosa-Rasa-Guna, Biological rhythms of Tridosa on the basis of Day-Night-Age-Season and Food intake, Role of Dosa in the formation of Prakrti of an individual, Role of Dosa in maintaining health.

Vata Dosa:

vGeneral locations *(Sthana),* general attributes *(Guna)* and general functions *(Samanya Karma)*. Five subdivisions of *Vat-a* with their specific locations, specific properties, and specific functions *(Prana, Udana, Samana, Vyana, Apana,* Pitta Dosa: General locations

(Sthana), general attributes (Guna) and general functions (Samanya Karma). Five subdivisions of Pitta with their specific locations, specific properties, and specific functions (Pacaka, Ranjaka, Atocaka, Bhrajaka, Sadhaka). Similarities and differences between Agni and Pitta, Kapha Dosa: General locations (Sthana), general attributes (Guna) and general functions (Karma) of Kapha. Five subdivisions of Kapha with their specific locations, specific properties, and specific functions (Bodhaka, Avalambaka, Kledaka, Tarpaka, Slesaka), Applied physiology of Tridosa principle: Kriyakala, Dosa Vrddhi-Dosa Ksaya,

Dhatu Posana:

Process of nourishment of dhatu Description of various theories of Dhatu Posana (Ksira-Dadhi, KedarT-Kulya, Khale Kapota etc), Dhatu: General introduction and definition of Dhatu. Formation, Definition (Nirukti), Distribution, Attributes, quantity, classification, Paficabhautika composition and Functions of all seven Dhatus in detail: Rasa, Rakta, Mamsa, Meda, Asthi, Majja, Sukra, Applied physiology of Dhatu: Manifestations of Ksaya and Vriddhi of each Dhatu. Description of Dhabi Pradosaja Vikara, Description of Mraya and Mrayi kind of relationship between Dosa and Dhatu, Description of the characteristic features of Astavidha Sara. Description of Rasavaha, Raktavaha, Mamsavaha, Medovaha, Asthivaha, Majjavaha and Sukravaha Srotamsi.

Ojas:

Definition, locations, synonyms, Formation, Distribution, Properties, Quantity, Classification and Functions of Ojas. Description of Vyadhiksamitva. Bala Vrddhikara Bhava. Classification of Bala. Relation between Slesma, Bala and Ojas, Applied physiology of Ojas: Etiological factors and manifestations of Ojaksaya, Visramsa and Vyapat. Physiological and clinical significance of Ojas, Upadhatu: General introduction and Definition of the term 'Upadhatu`. Formation, Nourishment, Quantity, Properties, Distribution and functions of each Upadhatu.

Stanya: Characteristic features and methods of assessing Suddha and Di:mita Stanya, Manifestations of Vrddhi and Ksaya of Stanya.

Artava:- Characteristic features of Suddha and Dusita Artava. Differences between Raja and Artava, physiology of Artavavaha Srotamsi, Study of Tvak

Physiology of Mala - Definition of the term 'Mala'. Definition, Formation, Properties, Quantity and Functions of Purisa, Mutra. Manifestations of Vrddhi and Kshaya of Purisa and Matra.

Sveda - Definition, Formation, Properties, Quantity and Functions of SvedavahaSrotamsi. Formation of Sveda. Manifestations of Vrddhi and Ksaya of Sveda.

Dhatumala - Definition, Formation, properties, Quantity, Classification and Functions of each Dhatumala .

<u>Prakrti- Sattva Vigyana</u>

Deha-Prakrti: Various definitions and synonyms for the term 'Prakrti'. Factors influencing the Prakrti. Classification of Deha-Prakrti. Characteristic features of the individuals belonging to each kind of Deha-Prakti. Recent advances in understanding the Prakrti,

Pancajnanendriya: Physiological description of Pancajnanendriya and physiology of perception of Sabda, Spar§a, Rapa, Rasa, Gandha. Indriya- panca-pancaka; Physiological description of Karmendriya.

Manas - Definition, location (sthana), Properties, Functions and Objects of Manas.

Atma - Definition, Properties of Atma. Difference between Paramatma and jivatma; Characteristic features of Atma.

Buddhi - Location, Types, Functions of Buddhi; Physiology of Dhi, Dhrti and Smrti.

Nidra - Definition of Nidra, Classification of Nidra. Tandra, physiological and dinical significance of Nidra; Svapnotpatti and Svapnabheda.

Physiology of special senses. Intelligence, Memory, Learning and Motivation, Physiology of sleep, Physiology of speech and articulation; Physiology of Pain and temperature.

Kosthanga Kriya Vigyana

Ahara: Definition and significance of Mara. Classification of Ahara. Ahara-vidhi-vidhana. Asta aharavidhi vitesayatana, Aharaparinamakara bhava.

Aharpachana: Ahara Paka **Prakriya,** Description of Annavaha Srotas. Description of Avasthapaka and Nishthapaka. Role of dosha in Aharapaka. Sara and Kitta Vibhajana. Absorption of Sara. Utpatti and Udieeran of Vata-Pitta-Kapha, Definition of the term Kostha. Physiological classification of Kostha and the characteristics of each kind of Kostha.

Agni: Description of the importance of Agni. Classification of Agni. Locations, properties and functions of Jatharagnl, Bhatagni, and Dhatvagni, Applied physiology of Agni in Kriya Sarira and Cikitsa, Description of the aetiology and features of Annavaha Srotodusti. Applied physiology of Annavaha Srotas: Arocaka, Ajima, AtIsara, Grahani, Chardi, Parinama Sula Agnimandya.

Description of the process of digestion of fats, carbohydrates and proteins in human gastrointestinal tract. Different digestive juices, their enzymes and their mechanisms of action. Functions of Salivary glands, Stomach, Pancreas, Small intestine, Liver and large intestine in the process of digestion and absorption.

Movements of the gut (deglutition, peristalsis, defecation etc.) and their control. Role of neuro-endocrine mechanisms in the process of digestion and absorption. Enteric nervous system, Applied physiology of gastrointestinal tract: Vomiting, Diarrhoea, Malabsorption etc., Recent understandings related to the gut microbiota and their role in health and disease, Introduction to biochemical structure, properties and classification of proteins, fats and carbohydrates, Description of the processes involved in the metabolism of proteins, fats and carbohydrates.

Vitamins: sources, daily requirement and functions. Physiological basis of signs and symptoms of hypo and hyper-vitaminosis.

Morden Physiology and its applied aspect (Physiology of Neuro-Immune-Endocrine Mechanisms)

Physiology of Nervous System. General introduction to nervous system: neurons, mechanism of propagation of nerve impulse, Study of CNS, PNS and ANS. Sensory and motor functions of nervous system. Functions of different parts of brain and spinal cord, Hypothalmus and limbic system, Physiology of Endocrine system. Classification and characteristics of different hormones. Description of hormones secreted by Hypothalamus, Pituitary gland, Thyroid gland, Parathyroid glands, Pancreas, Adrenal glands and their physiological effects. Effects of hypo and hyper-secretion of various hormones, Male and

female reproductive physiology. Spermatogenesis and oogenesis. Hormonal regulation of uterine and ovarian cycles. Physiology of pregnancy and lactation. Parturition, Adipose tissue and its Function. Circulating lipids. Description of lipoproteins like VLDL, LDL and HDL and their composition, Physiology of immune system. Definition and classification of immunity: Innate, acquired and artificial. Mechanisms involved in humoral and cell mediated immunity.

Cardiovascular physiology, Respiratory physiology and Blood:

Physiology of Cardio-Vascular system: Functional anatomy of cardiovascular system. Cardiac cycle. Heart sounds. Regulation of cardiac output and venous return. Physiological basis of ECG. Heart-rate and its regulation. Arterial pulse. Systemic arterial blood pressure and its control. Regional circulations. Physiology of lymphatic circulation, Physiology of Respiratory system: Functional anatomy of respiratory system. Ventilation. Mechanism of respiration. Exchange and transportation of gases. Neural and chemical control of respiration. Spirometry and lung function tests. Artificial respiration, Functions of Haemopoetic system: Composition and functions of blood and blood cells. Haemopoiesis- (stages and development of RBCs, WBCs and platelets); Introduction to bone marrow: composition and functions of bone marrow. Structure and functions of haemoglobin, mechanism of blood clotting, study of platelets. physiological basis of blood groups. Principles of blood transfusion, plasma proteins-synthesis and functions. Applied physiology: Anaemia, Jaundice.

Musculoskeletal Physiology:

Physiology of muscles. Classification of muscles. Electrical and mechanical properties of Cardiac, skeletal and smooth muscles

Physiology of Excretion:

Physiology of excretion. Functional anatomy of urinary tract. Functions of kidneys. Mechanism of formation of urine. Control of micturition. Renal function tests, Structure and functions of skin, sweat glands and sebaceous glands. Physiograph, Computerised spirometry, Biochemical Analyzer, Pulse oxymeter, Elisa Reader, Hematology Analyzer, Tread mill, Recent studies in biorhythms, Recent advances in Neuro-Immune-Endocrine physiology, Recent advances in stem cell research