DELHI PHARMACEUTICAL SCIENCES AND RESEARCH UNIVERSITY

NEW DELHI

Syllabus

B.PHARMACY (AYURVEDA)

SCHEMEOFTEACHINGANDEXAMINATION

Scheme ofTeaching & Examination
Semester-I

Subject Code	**Subject Title**	**Teaching hours/week**			**Credits**		**Examination**	
		L	T	P		**Internal**	**ESE**	**Total**
BPA-101T	Fundamentals of Ayurveda including Swasthavritta	3	-	-	**3**	25	75	100
BPA-102T	Fundamentals of Anatomy and Physiology	3	-	-	**3**	25	75	100
BPA-103T	Fundamentals of DravyagunaVigyan-I	3	-	-	**3**	25	75	100
BPA-104T	Computer & its applications in pharmaceutical Sciences*	2	-	-	**2**	15	35	50
HS101	Environmental Science*	2	-	-	**2**	15	35	50
HS102	Sanskrit *	2	-	-	**2**	15	35	50
BPA-111P	Fundamentals of Anatomy and Physiology	-	-	3	**2**	25	75	100
BPA-112P	Fundamentals of DravyagunaVigyan-I	-	-	3	**2**	25	75	100
BPA-113P	Computer & its applications in pharmaceutical Sciences*	-	-	3	**2**	15	35	50
	Total =	**15**		**09**	**21**			**700**

Scheme ofTeaching & Examination
Semester-II

Subject Code	Subject Title	Teaching hours/week			Credits		Examination	
		L	T	P		Internal	ESE	Total
BPA-201T	Pharmaceutical Biology	3	-	-	**3**	25	75	100
BPA-202T	Pharmaceutical chemistry (Organic & Inorganic)	3	-	-	**3**	25	75	100
BPA-203T	Pharmacognosy & Phytochemistry-I	3	-	-	**3**	25	75	100
BPA-204T	Pharmaceutics-I (General and Dispensing Pharmacy)	3	-	-	**3**	25	75	100
BPA-205T	Rasa Shastra-I	3	-	-	**3**	25	75	100
BPA-206T	**Dravyaguna Vigyan–II (Nutraceuticals)**	**3**	**-**	**-**	**3**	25	75	**100**
HS201	English/Business communication*	2	-	-	**2**	15	35	50
HS202	Disaster management*	2	-	-	**2**	15	35	50
BPA-211P	Pharmaceutical Biology	-	-	3	**2**	25	75	100
BPA-212P	Pharmaceutical chemistry (Organic & Inorganic)	-	-	3	**2**	25	75	100
BPA-213P	Rasa Shastra-I	-	-	3	**2**	25	75	100
BPA-214P	**Dravyaguna Vigyan–II (Nutraceuticals)**	**-**	**-**	**3**	**2**	**25**	**75**	**100**
	Total =	**22**		**12**	**30**			**1100**

Scheme ofTeaching & Examination
Semester-III

Subject Code	**Subject Title**	**Teaching hours/week**			**Credits**		**Examination**	
		L	T	P		**Internal**	**ESE**	**Total**
BPA-301T	**Dravyaguna Vigyan–III**	**3**	**-**	**-**	**3**	25	75	**100**
BPA-302T	Pharmacognosy & Phytochemistry-II	3	-	-	**3**	25	75	100
BPA-303T	Pharmaceutics-II (Physical Pharmacy)	3	-	-	**3**	25	75	100
BPA-304T	Pharmacology-I	3	-	-	**3**	25	75	100
BPA-305T	Rasa Shastra-II	3	-	-	**3**	25	75	100
BPA-306T	Pathophysiology	3	-	-	**3**	25	75	100
BPA-311P	**Dravyaguna Vigyan –III**	**-**	**-**	**3**	**2**	**25**	**75**	**100**
BPA-312P	Pharmacognosy & Phytochemistry-II	-	-	3	**2**	25	75	100
BPA-313P	Pharmaceutics-II (Physical Pharmacy)	-	-	3	**2**	25	75	100
BPA-305T	Rasa Shastra-II	-	-	3	**2**	25	75	100
	Total =	**18**		**12**	**26**			**1000**

Scheme ofTeaching & Examination
Semester-IV

Subject Code	Subject Title	Teaching hours/week			Credits		Examination	
		L	T	P		Internal	ESE	Total
BPA-401T	Pharmaceutical analysis of Ayurvedic Drugs-I	3	-	-	**3**	25	75	100
BPA-402T	Pharmacognosy & Phytochemistry-III	3	-	-	**3**	25	75	100
BPA-403T	Pharmaceutical Engineering	3	-	-	**3**	25	75	100
BPA-404T	Rasa Shastra-III	3	-	-	**3**	25	75	100
BPA-405T	**DravyagunaVigyan-IV**	**3**	**-**	**-**	**3**	25	75	**100**
BPA-406T	**Pharmacology –II**	**3**	**-**	**-**	**3**	25	75	**100**
HS-401T	Human values and Professional Ethics	3	-	-	**3**	25	75	100
BPA-411P	Pharmaceutical analysis of Ayurvedic Drugs-I	-	-	3	**2**	25	75	100
BPA-412P	Pharmacognosy & Phytochemistry-III	-	-	3	**2**	25	75	100
BPA-413P	Rasa Shastra-III	-	-	3	**2**	25	75	100
BPA-414P	**DravyagunaVigyan–IV**	**-**	**-**	**3**	**2**	**25**	**75**	**100**
	Total =	**21**		**12**	**29**			**1100**

Note: *Industrial training of Thirty days (30) is to be satisfactorily completed before a student is declaredeligible for the degree. Normally industrial training will be arranged at the end of 4th semester either in onestretchortwostretches duringendsemestervacations.*

Scheme ofTeaching & Examination
Semester-V

Subject Code	Subject Title	Teaching hours/week			Credits		Examination	
		L	T	P		Internal	ESE	Total
BPA-501T	Herbal Drug Technology	3	-	-	**3**	25	75	100
BPA-502T	Pharmaceutical Analysis of Ayurvedic Drugs-II	3	-	-	**3**	25	75	100
BPA-503T	Pharmaceutical Technology for Ayurvedic drugs-I	3	-	-	**3**	25	75	100
BPA-504T	Rasha Shastra-IV	3	-	-	**3**	25	75	100
BPA-505T	Fundamentals of Bhaishajya Kalpana-I	3	-	-	**3**	25	75	100
BPA-511P	Pharmaceutical Analysis of Ayurvedic Drugs-II	-	-	3	**2**	25	75	100
BPA-512P	Pharmaceutical Technology for Ayurvedic drugs-I	-	-	3	**2**	25	75	100
BPA-513P	Rasha Shastra-IV	-	-	3	**2**	25	75	100
BPA-514P	Fundamentals of Bhaishajya Kalpana-I	-	-	3	**2**	25	75	100
	Industrial Training	-	-		**2**			
	Total =	**15**		**12**	**25**			**900**

Scheme ofTeaching & Examination
Semester-VI

Subject Code	Subject Title	Teaching hours/week			Credits		Examination	
		L	T	P		Internal	ESE	Total
BPA-601T	Pharmacokinetics and Biopharmaceutics	3	-	-	**3**	25	75	100
BPA-602T	Pharmacology & Toxicology of Ayurvedic Drugs-I	3	-	-	**3**	25	75	100
BPA-603T	Bhaishajya Kalpana-II	3	-	-	**3**	25	75	100
BPA-604T	Pharmaceutical Microbiology	3	-	-	**3**	25	75	100
BPA-605T	Advanced Pharmacognosy	3	-	-	**3**	25	75	100
BPA-606T	Medicinal Chemistry	3	-	-	**3**	25	75	100
BPA-611P	Pharmaceutical Microbiology	-	-	3	**2**	25	75	100
BPA-612P	Advanced Pharmacognosy	-	-	3	**2**	25	75	100
BPA-613P	Bhaishajya Kalpana-II	-	-	3	**2**	25	75	100
	Total =	**18**		**09**	**24**			**900**

Note:*Hospitaltrainingof15daysistobesatisfactorilycompletedbeforeastudentisdeclaredeligibleforthe degree. Normally hospital training will be arranged at the end of 6th semester either in one stretch or twostretchesduringendsemestervacations.*

**Non-university examination*

Scheme ofTeaching & Examination
Semester-VII

Subject Code	**Subject Title**	**Teaching hours/week**			**Credits**		**Examination**	
		L	T	P		**Internal**	**ESE**	**Total**
BPA-701T	Pharmaceutical Jurisprudence & Pharmaceutical Management	3	-	-	**3**	25	75	100
BPA-702T	Pharmaceutical Technology for Ayurvedic Drugs-II	3	-	-	**3**	25	75	100
BPA-703T	Pharmacology & Toxicology of Ayurvedic Drugs-II	3	-	-	**3**	25	75	100
BPA-704T	Instrumental Methods of Analysis	3	-	-	**3**	25	75	100
BPA-705T	Bhaishajya Kalpana-III	3	-	-	**3**	25	75	100
BPA-711P	Pharmaceutical Technology for Ayurvedic Drugs-II	-	-	3	**2**	25	75	100
BPA-712P	Instrumental Methods of Analysis	-	-	3	**2**	25	75	100
BPA-713P	Bhaishajya Kalpana-III	-	-	3	**2**	25	75	100
	Hospital Training	-	-	-	**2**			
	Total =	**15**		**09**	**23**			**800**

Scheme ofTeaching & Examination
Semester-VIII

Subject Code	Subject Title	Teaching hours/week			Credits		Examination	
		L	T	P		Internal	ESE	Total
BPA-801T	Modern Analytical Techniques	3	-	-	**3**	25	75	100
BPA-802T	Bhaishajya Kalpana-IV	3	-	-	**3**	25	75	100
BPA-803T	Clinical Pharmacy	3	-	-	**3**	25	75	100
BPA-804T	Yoga	3	-	-	**3**	25	75	100
BPA-805T	Herbal Cosmetics	3	-	-	**3**	25	75	100
BPA-806T	Marketing Management	3	-	-	**3**	25	75	100
BPA-811P	Modern Analytical Techniques	-	-	3	**2**	25	75	100
BPA-812P	Bhaishajya Kalpana-IV	-	-	3	**2**	25	75	100
BPA-813P	Yoga	-	-	3	**2**	25	75	100
BPA-814P	Herbal Cosmetics	-	-	3	**2**	25	75	100
	Project Work	-	-	-	**2**			
	Total =	**18**		**12**	**28**			**1000**

Note: *Students will be allotted to prepare one specific Ayurvedic formulation. They will study the SOP aswell as manufacture the formulatuion by observing API norms and they will also perform Quality ControltestsandmakeaconclusionofDrug/Formulation.*

SEMESTERVISECREDITSASSIGNED

S.NO.	SEMESTER	CREDITSASSIGNED
1	1st	21
2	2nd	30
3	3rd	26
4	4th	29
5	5th	25
6	6th	24
7	7th	23
8	8th	28
	Total =	**206**

SEMESTER-I

SEMESTER-I

BPA-101TFUNDAMENTALSOFAYURVEDAINCLUDINGSWASTHAVRITTA

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shall consist of four units as per the syllabus.The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1 question from each unit. Each question should be of 10 marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and cover the entire syllabus.This question should have objective or short answer type questions and shall be of 20 marks.

Unit I

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.

Introduction to Brihatrayi, Laghutrayi and their contribution in development of pharmaceutical science

Ayurveda Darshana Nirupana Philosophical background of fundamentals of Ayurveda.Etymological derivation of the word "Darshana".Nyaya, Vaisheshika, Sankhya and Yoga. Ayurveda as unique and independent school of thought Padartha: Lakshana, enumeration and classification, Bhava and Abhavapadartha, Padartha according to Charaka (Karana-Padartha).

Unit II

Dravya Vigyaniyam Dravya: Lakshana, classification and enumeration.

Panchabhuta: Brief introduction of panch mahabhoot and lakshan 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.

Purusha: Asmentioned in Ayurveda-Ativahikapurusha/Sukshmasharira/Rashipurusha/Chikitsapurusha/ Karmapurusha/Shaddhatvat makapurusha.

Manas: Lakshana, synonyms, qualities, objects, functions, dual nature of mind (*ubhayaatmakatvam*), as a substratum of diseases, penta-elemental nature (*panchabhutatmakatvam*). Role of Panchamahabhuta and Trigunain Dehaprakriti and Manasaprakriti respectively.

Examination

Ten points for examination i.e. Kaarana, karana, karya, karyayoni, karyaphala, Anubandha, Desha, kala, Prakritiand Upaya and their utility and application in Pharmacy.

Introduction and utility of Pramana - Pratyaksha, Anuman, Aaptopadesh and Yukti.

Unit III

Swasth vritta prayojna, swastha lakshana, swasth vritta, dincharya, dhumpana, vyayama, kshorkarma, abhyanga, sharira parimarjana, sanan, anulepanadi, vastra dharna, paduka, padatra, chattra, dandadharna, traupastambha, ratrichrya, swapnanidra, bhramcharya, rituchrya, sanchya, prakopa, prashamna of dosha accordinding to ritu, ritusandhi. Importance of aahar, nidra and brahmacharya. Importance of shuddh vayu, jala, deshaand kala.

Unit IV

Mansik sadvritta, samajik aswasthavritta, dharmik swasthavritta, dharniya adharniya vega, sanshodhan and sanshamna, Rasayana and vajikarna. Communicable diseases, respiratory diseases such as tuberculosis, whooping cough, influenza, mumps etc.Intestinal infection such as Cholera, hepatitis, Typhoid etc. arthropod, borne diseases such as Dengue, malaria etc. Immunization: National immunization schedule and WHO EPI immunization schedule.

Text Books:

1. Dr. Ram Harsh Singh. Swasthvritta Vigyan Chaukhamba Prakashan, New Delhi, Varanasi.
2. Dr. Kashinath Samgandhi Swasthvritta Suddha Chaukhamba Prakashan, New Delhi, Varanasi.

Reference Books:

1. Charak Sahimta, Chaukhamba Prakashan, New Delhi, Varanasi.
2. Sushrat Sahimta, Meharch and Laksham and as Prakashan, New Delhi.

BPA-102TFUNDAMENTALSOFPHYSIOLOGYANDANATOMY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: Thequestionpapershallconsistoffourunitsasperthesyllabus.Thepapersetterwill settwo questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestionshouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and coverthe entire syllabus. This question should have objective or short answer type questions andshallbe of20marks.

FUNDAMENTALSOFPHYSIOLOGY

UnitI

a) **BasicTissues**
Function of epithelial, connective, muscular and nervous, muscle contraction and properties.Nerve impulse generation and transmission including introductory knowledge of Dosha, DhatuandMal withtheirtypesandproperties.

b) **Bodysystems**
Respiratory system: Respiratory volumes and capacities, ventilation, compliance and resistance,gaseousexchangeandtransport inblood,nervousandchemicalregulationsofrespirations.
Renalsystem: Kidneyandurinarytracts,nephrontransportprocesses,concentrationanddilutionofurine,plasmaclearances. Micturition.

Unit II

Blood and cardiovascular systemsincluding Digestive system: Body fluids, roles ofblood cellular components and plasma proteins, coagulation, blood groups, blood disorders.“Circulation”cardiaccycle,impulsegenerationandtransmission,electrocardiogram;haemodynamics; capillary circulation;
DetailconceptsofDoshas,Dhatuandmal,prakritiprikshananddhatuposhannyaya.
Ayurvedic concept of Ojus and vyadhikshamatva.

Digestivesystem: NutritionalandVitaminrequirements,vitamindeficiencies,structureofalimentarycanal,structureandfunctions of liver.Detailed concept of Agni. Classification and importance. Ayurvedic and modern concept of digestion and metabolism.

FUNDAMENTALSOFANATOMY

Unit III-Introduction and Scope

IntroductoryknowledgeofAnatomy.
Scope&TerminologyofAnatomy with concept of shadang sharira.
ElementarycellandtissuesoftheBody-EpithelialTissues,MuscularTissues,NervousTissue.

Unit IV

Skeletal muscles of the body. Nine regions of the abdomen and organs situated in theseregions& basicanatomyoftheorganse.g. liver,kidney, lungs,heart, pancreas, stomach.
IntroductoryknowledgeofAyurvedicdescriptionofAsthisandhi,SnayuandKandara.
General introduction to male and female reproductive system with concept of Shukra, Aartav and

Garbhavkranti.
Introduction to nervous system and special senses with Ayurvedic view of Gyanendriya.

TextBooks:

1. A.C. Guyton & J.E. Hall, Text book of Medical Physiology published in India by Prism Books Ltd. onarrangementwith W.B.Saunders Company,U.S.A.,U.S.A., NinthEdition,1996.

2. C.A.Keele,E.NeilandN.Joels,SamsonWright's Appliedphysiology,ThirteenthEdition,publishedbyOxfordUniversityPress,1982.

3. Cunningham's Textbook of Anatomy, edited by G.J. Romanes, Eleventh Edition, published by OxfordUniversityPress, 1972.

ReferenceBooks:

1. W.F. Ganong, Review of Medical Physiology, Thirteenth Edition, published by Appleton &Lange,U.S.A.,1987.

2. A.J.Vander,J.H.ShermanandD.S.Luciano,HumanPhysiology.

3. RossandWilson.AnatomyandPhysiologyinHealthandIllness.Sydney:ChurchillLivingstone.

4. RelativeportionsofSushrutaSamhita.

BPA-111(P): FUNDAMENTALS OFANATOMYANDPHYSIOLOGY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical'sasper topicsin thesyllabus forthe coursewill beconductedinthe laboratoryclass.
Listofexperiments:

1. Introductorystudyofhumanskeleton.
2. Studyofhumerus,tibia, fibla,scapla,vertebra.
3. Studyofdifferentsystemswiththehelpofchartsandmodels.
4. Studyofpreservedhumanorgans.
5. Recordingofbodytemperature,pulserateandbloodpressure.
6. HBestimation,BT,CTrecording.
7. Physico-chemicalparametersofUrine.
8. DeterminationofBloodgrouping.
9. DeterminationofBleedingtime.
10. DeterminationofClottingtime.
11. EstimationofHaemoglobin.
12. DemonstrationofE.S.R.
13. DemonstrationofE.C.G.

TextBooks:

1. Gray's Anatomy, edited by P.L. Williams & R. Warwick, 38th Edition, published by Churchilllivingstone,1995.
2. Cunningham's Textbook of Anatomy, edited by G.J. Romanes, Eleventh Edition and published byOxfordUniversityPress,1972.

ReferenceBooks:

1. TortoraGJ,DerricksonB.PrinciplesofAnatomyandPhysiology.NewYork:JohnWiley&Sons.
2. RossandWilson.AnatomyandPhysiologyinHealthandIllness.Sydney:ChurchillLivingstone.
3. GuytonAC,HallJE.Textbookof MedicalPhysiology. NewYork:WBSandersCo.

BPA-103TFUNDAMENTALSOFDRAVYAGUNAVIGYANA–I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shall consist of four units as per the syllabus.The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1 question from each unit. Each question should be of 10 marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and cover the entire syllabus. This question should have objective or short answer type questions andshallbe of20 marks.

Unit I

Definition & importance of Dravyaguna viganan.

Dravya - Definition, panchabhautic composition,properties and its importance

Classification of Dravya:

A) According to Ayurvedic Principles:

(a)Karya-Karan bheda (b) Chetan-Achetan bheda (c)Panchbhautik composition (d)Yoni bheda (e)Prayoga bheda (f)Rasa bheda (g)Veerya bheda (h)Vipak bheda (i)Doshkarma bheda

B) Classification of Ahara & Aushadha dravyas according to Charaka Samhita, Sushruta Samhita & Bhavaprakash.

Unit II

Concept of Rasapanchaka,

A) Rasa- Definition, Types,Panchbhautic composition, properties, action on dosha,dhatu & mala.

B) Guna- Definition, classification of Guna, Panchmahabhautic composition of Sharira Guna, its properties and action on Dosha, Dhatu and Mala.

C) Veerya – Definition, concept of veerya, Enumeration of veerya, Properties, Action on Dosha, Dhatu and Mala.

D) Vipaka–Definition, Types, Properties and action on Dosha, Dhatu and Mala.

E) Prabhava–Definition, concept of Prabhava, action of Prabhava and importance of prabhava.
Definition and concept of samanpratyarabdha and vichitrapratyarabdha.

Unit III

Definition, description and understanding of following karma with examples.
Deepan, Pachan, Grahi, Stambhan, Bhedan, Rechan, Anuloman, Sransan, Sanshodhan, Rasayana, Vajikaran, Vyavayi, Madkari, Vikasi, Swedana, Swedopaga, Snehana, Snehopaga, Vamana, Vamanopaga, Virechana, Virechanopaga

Unit IV

Description regarding following nighantus including primary introduction, author, period, classification & its specialty.

a) Dhanwantari nighantu b) Madanpala nighantu c) Kaideva nighantu d) Bhavprakash nighantu e) Raj nighantu.

Concept of Dravyasyakarmukatvam (Mode of action) & Aushadhayogasyakarmukatvam (Mode of action of classicalformulations) according to Ayurveda.

Various impurities of drugs and their methods of purification:

1) Guggulu 2) Hingu

Adulteration of drugs and methods of identification:

1) Guggulu 2)Hingu 3) Lavang 4) Tvak 5) Kampillakchurna 6) Keshar 7) Madhu 8) Daruharidra

Text Books:

1. Dravyaguna vijana; by Dr. Mansi Desh pandey, Chaukhamba Sanskrit Pratisnthana, New Delhi.
2. Dravyaguna vijana Vol1-5 by Prof. Sharma P.V; published by Chaukhambha Bharti Academy, Varanasi.

Reference Books:

1. The Wealth of India Publication and Directorate (CSIR,NewDelhi)
2. Data base on medicinal plants used in Ayurveda by CCRAS, NewDelhi.
3. Indian Medicinal Plants by K.R. Kirtikar and B.D.Basu

BPA-112(P) FUNDAMENTALSOFDRAVYAGUNA VIGYANA – I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note: Practical's aspertopics inthesyllabusmentioned

1. Evaluation ofdrugsmentioned intheory
2. Collectionofminimum30herbariumspecimenfromfieldvisit.
3. Compilationof adrugnotlessthan 25 pages

TextBooks:

1.Dravyagunavijana;byDr.MansiDeshpandey, ChaukhambaSanskritPratisnthana,NewDelhi.

2. DravyagunavijanaVol1-5byProf.SharmaP.V;publishedbyChaukhambhaBhartiAcademy,Varanasi.

ReferenceBooks:

1. TheWealth ofIndiaPublicationandDirectorate(CSIR,NewDelhi)
2. Databaseonmedicinalplants used inAyurvedabyCCRAS, NewDelhi.
3. IndianMedicinalPlantsbyK.R.KirtikarandB.D.Basu

BPA-104TCOMPUTERANDITSAPPLICATIONSINPHARMACEUTICALSCIENCES

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
2	0	0	2	15	35	50	3hrs

Note: The question paper shall consist of four units as per the syllabus.The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1 question from each unit. Each question should be of 10 marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and cover the entire syllabus. This question should have objective or short answer type questions and shall be of 20 marks.

Unit-I

a) Fundamental of Computer: Introduction to computers, Characteristics of computers,Historical perspective of computers, Computer generations, Types of computers and uses, Software and Hardware, Basic organization of a computer system and functions performed by each unit. Various Input devices like Keyboard, Mouse, Joy stick, Electronic pen, Track ball etc. and output devices Printers, Monitors. Memory storage: Memory Cells, Semi conductor and Magnetic core memory, ROM and its types, RAM,Cache and Virtual Memory. Secondary Storage devices and their organization (Hard disk, Floppy disk, CD and DVD).

b) Operating System: Definition, Need and organization of OS, Functions performed by operating system. Type of Operating System. DOS, windows, Directories and files. Commands (internal & external). Icons, Clipboard. Folders, Major differences between a DOS and Windows.

Unit II

a) **Data Communication and Networks:**Basic elements of a commutation system, Data transmission mode, Network Topologies (ring, star,fully connected and Bus), LAN and WAN, Bounded and unbounded communication media.

b) **Internet Technology:** Internet, Services provided by internet,Potential uses and abuses of internet, Working of search engine, Effective use of social media sites. Concept and implementation of E-Services (Digital India)

Unit III

a) Computer Virus: Definition, Causes and symptoms of virus,Types of viruses, Detections, prevention and cure against viruses using antivirus software packages.

b) Role of Computers in Pharmacy: Use of computer in various pharmaceutical and clinical applications like drug information services hospital and community pharmacy, drug design, pharmacokinetics and data analysis.

Unit IV

Ms Office Package:

a) Word Processing Package: Features and uses of MS-Word processing, File handling (opening, creating, saving printing and editing), Formatting, Printing setups, Table Handling, Mail Marge, Spell check, file protection etc. in MS-Word.

b) Spread sheet Package: Basics of spread sheet, feature and uses of Excel, Worksheet, formatting

Sheets,Data (Sort and Filter),Calculation and graphing using formulae and function,
Goal seek, scenario

c) Presentation Package: Introduction to powerpoint, features and uses of PowerPoint, creating a new presentation, editing and formatting, working with slides in different views, Animation, Transitions, Action buttons, Macros, Insert (text, slide, picture).

Reference Book

1. Sinha PK, Sinha P. Computer Fundamentals. New Delhi: BPB Publications.
2. Rajaraman V. Fundamental of Computers. New Delhi: Prentice Hall (India).

BPA-113(P): COMPUTERANDITSAPPLICATIONSINPHARMACEUTICALSCIENCES

TeachingScheme			Credits	Marks			Duration ofEndSemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	15	35	50	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformedbyastudent during thesemester.

Listof Practicals:

1. BasicexercisesofMSWord
2. BasicexercisesofExcel
3. Basicexercisesof Internet
4. BasicexercisesofPowerPointpresentation
5. Basicexercisesofspreadsheets
6. BasicexercisesofEmail
7. BasicexercisesofsearchingdatabasesrelatedtoAyurvedicPharmacy
8. BasicexercisesofPaint
9. BasicexercisesofpreparingPdffiles
10. Basicexercises ofconverting docfiles intooneanother

TextBooks:

1. SinhaPK,SinhaP.ComputerFundamentals.NewDelhi:BPBPublications.
2. RajaramanV.FundamentalofComputers.New Delhi:PrenticeHall(India).

HS 101ENVIRONMENTALSCIENCE

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
2	0	0	2	15	35	50	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will settwo questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestionshouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and coverthe entire syllabus. This question should have objective or short answer type questions andshallbe of20marks.

Unit-I
IntroductiontoEnvironmentandBiodiversity
Definition; Natural and manmade environments and inter-relationships amongst and between them,components of environment and relationship between different components, Relationship between manandenvironment, impactof technology onenvironment, environmental degradation.

Biodiversity Introduction, genetic, species and ecosystem diversity, bio-geographic classification ofIndia,value and importance of biodiversity, threats to biodiversity, endangered and endemic species in India,conservationof biodiversity.

Unit-II
EnvironmentalPollution:
AirPollution*:*Compositionofair,structureofatmosphere,ambientairqualitystandards, classification of air pollutants, sources of common air pollutants like SPM, SO_2, NOX, naturalandanthropogenic sources,effectsof commonairpollutants, carboncredit.

NoisePollution:Introduction,sourcesofnoisepollution,ambientnoiselevels,effectsofnoisepollutiononhumanbeingandwildlife, noisepollutioncontrols,noisestandards.

Water Pollution: Introduction, water quality standards, sources of water pollution, classification ofwaterpollutants,effectsof waterpollutants,eutrophication,andmeasuresto controlwater pollution.

Unit-III
EnergyResources: Understandingnaturalresources,renewableandnon-renewableresources,sustainableenergyresources,destructionversusconservation,forestresources,waterresources, food resources, energy resources and land resources, conventional energy sources and theirproblems,advantagesandlimitationsnon-conventionalenergysources,problemsduetooverexploitationofenergyresources.

Unit-IV
Social Issues and Environment: Sustainable development and practices of improvingenvironment,

lawsandacts for environmentalprotection, wastemanagement.

TextBook:

1. NebelBJ,WrightRT.Environmentalscience–thewaytheworldworks.NewJersey:PrenticeHall.

ReferenceBook:

1. BotkinDB,KellerEA.Environmentalscience.NewYork:JohnWiley&Sons.

HS- 102 SANSKRIT

TeachingScheme			Credits	Marks			Duration ofEnd SemesterExamination
L	T	P/D	C	Sessional	End SemesterExamination	Total	
2	0	0	2	15	35	50	3hrs

Section A: Grammar

A.

1. Forms of Rama and Vana (Masculine Gender and Neutral Gender). and parasmaipadi verbal routes and verbs in present tense.
2. Study of seven cases (Karaka)
3. Forms of Hari in masculine gender and parasmaipadi verbs in future tense.
4. Bhanu in masculine gender and past tense.
5. Nethru in masculine gender and imperative mode.
6. Verb “Go” and potential mode.

B.

1.Latha, Dhanu and Mathi in feminine gender and atmanepadi verbs of first punctuation.
2. Verbs of forth a sixth conjugation.
3. Vari, Madhu words in neutral gender and verbs of tenth conjugation.
4. ‘Avyaya’ words and verbs of second conjugatin.

C. Pronouns and Numeric.
D. Consonant ending words and fifth and eight conjugation.

Section B: Sanskrit Literature

- Prose and poetry from two stories of ‘Hithopadesha’.
- Maheshwar Sutram, Swara & Vyanjana knowledge.
- Swara sandhi, Vyanjana sandhi & Visarga Sandhi.

Reference books

a) Laghu Sidhanta kaumudi
b) Anuvada Chandrika
c) Hitopadesh (Author: Narayana Pandit)

SEMESTER-II

SEMESTER-II

BPA-201 PHARMACEUTICALBIOLOGY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shall consist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1 question from each unit. Each question should be of 10 marks.

Apart from this, the paper setter will set question No. 9 which will be compulsory and cover the entire syllabus.This question should have objective or short answer type questions and shall be of 20 marks.

Unit-I

Structure of typical plant cell and its important inclusions including mitochondria, ribosomes, chloroplast, neucleus, endoplasmic reticulum, glogi apparatus, cytoplasm etc. Structure and functions of some important plant tissues like parenchyma, xylem, sclerenchyma, phloemetc.

Unit-II

General morphology of plants with special reference to external features of flowers (types of flowers- unisexual, bisexual, hermaphrodite and inflorescence), fruit and its types, seeds (monocot and dicot), barks, roots (tap root and adventitious root system), woods (hard and soft woods) and leaves (apexes, margins, venations, types)

Unit-III

Principles of classification of plants with special reference to the plants of the following families.Studies of chemical constituents and medicinal value of Rutaceae, Leguminosae, Umbelliferae, Apocynaceae, Solanaceae, Convolvulaceae, Euphorbiaceae, Liliaceae, Zingiberaceae.

Unit –IV

Definition of the crude, organized and unorganized drugs, Classification of the crude drugs including Alphabetical, morphological, microscopical, chemical etc.

Methods of systematic studies of the crude drugs, Cultivation methods, collection and storage of crude drugs.

Text Books:

1. A text book of *'Pharmacognosy '*by R.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2. Kokate CK, Gokhale SB, Purohit AP: *Parmacognosy* 36th edn. Nirali Prakashan,Pune,India.
3. S.S Handa. Textbook of Pharmacognosy Vallabh Publications, NewDelhi.

Reference Books:

1. Evans WC (2002): *Trease and Evan's Pharmacognosy*. 15th edn.,Saunder' Elsevier Pvt Ltd. NewDelhi-24, India.
2. Arya V, Kaur R. *Kangrian Medicinal Flora*. 1st edn. Pranav Prakashan, Kangra,H.P.,India.
3. Khandelwal KR (2006): *Practical Pharmacognosy* Techniques and Experiments 16th Edn. Nirali Prakashan, Pune, India.

BPA-211(P) PHARMACEUTICALBIOLOGY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class. Followingis suggesteda list of exercises out of which a minimum of 8/10 experiments must be performed by astudentduringthe semester.

Listofexperiments:

1. Tostudydifferentpartsofleaves.
2. Tostudydifferentpartsofflowers.
3. Tostudydifferentpartsoffruits.
4. Tostudydifferentpartsofcompoundmicroscope.
5. Tostudydifferentpartsofbinocularmicroscope.
6. Tostudydifferentrootsystems
7. Tostudydifferencebetweenmonocotanddicotplantsmorphologically.
8. Tocarryoutmorphologyofleaves,flower andfruit.
9. Tostudydifferenttypesofbarks.
10. TostudydifferentPlanttissueslikeParenchyma,collenchyma,sclerenchyma,xylem,phloem etc.

TextBooks:

1. Atextbookof*'Pharmacognosy'*byR.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2. KokateCK,GokhaleSB,PurohitAP:*Parmacognosy*36th edn.NiraliPrakashan,Pune,India.

ReferenceBooks:

1. EvansWC(2002):*TreaseandEvan'sPharmacognosy*.15th edn.,Saunder'ElsevierPvtLtd.NewDelhi-24, India.
2. AryaV,KaurR.*KangrianMedicinalFlora*.Istedn.PranavPrakashan,Kangra,H.P.,India.
3. KhandelwalKR(2006):*PracticalPharmacognosy*TechniquesandExperiments16th Edn.NiraliPrakashan,Pune,India.

BPA-202TPHARMACEUTICALCHEMISTRY-ORGANICANDINORGANICCHEMISTRY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will settwo questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.

Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsandshallbe of20marks.

ORGANICCHEMISTRY

Unit-I

a) **StructureandProperties**

Basic atomic and molecular structure with their properties-hybridization, valance bond theory,dipolemoment, empirical formula,interandintramoleculerhydrogenbonding,ionicandcovalentbonding inchemical compounds.

b) **AliphaticCompounds**

Structure, nomenclature, preparation and reactions of alkanes and structure, nomenclature,preparation andreactions ofalkenes.Inductive andelectromericeffects.

Unit-II

a) **Isomerisim**

Isomerismandnomenclatureandassociatedphysicochemicalproperties,opticalactivity.

b) **ReactionMechanisms**

Additionreactions,Eliminationreactions,Substitutionreactions(nucleophilicandelectrophilicsubstituti ons).

INORGANICCHEMISTRY

Unit-III

a) **IntroductionofPeriodicTable**

Introduction of periodic table, electronic configuration. Properties and important compounds ofiron,goldandpotassium.

b) **PharmaceuticalAgents**

Preparation and uses of Ammonium chloride and physical and chemical properties of Borax withtheiruses.

Unit-IV

a) **QuantitativeandQualitativestudy**

GeneralintroductionofQuantitativeandQualitativestudyofheavymetals(Lead,arsenic,mercury)inAyur vedic preparation.

b) **Titrametricanalysis**

General introduction of Titrametric analysis and General introduction of Gravimetric methodsofanalysis.

TextBooks:

1) SykesPA.AGuidebook toMechanismsinOrganicChemistry.Hyderabad:OrientLongman.
2) Vogel.Vogel'sTextbookofMicroandSemimicroQualitativeInorganicAnalysis.Hyderabad.

ReferenceBooks:

1) Block JH, Roche E, Soine TO, Wilson CO. Inorganic Medicinal and PharmaceuticalChemistry.Philadelphia:Leaand Febiger.
2) JefferyGH,BessettJ,MendhamJ,DenneyRC.Vogel'sTextbookofQuantitativeInorganic Analysis including Elementary Instrumental Analysis. London:ELBS andLongman
3) Roberts JD, Caserio MC. Basic Principles of Organic Chemistry. New York:WA.BenjaminInc.

BPA-212(P)PHARMACEUTICALCHEMISTRY-ORGANICANDINORGANICCHEMISTRY

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note: Practical's as per topics in the syllabus for the course will be conducted in the laboratory class. Followingis suggested a list of exercises out of which a minimum of 8/10 experiments must be performed by astudentduringthesemester.

Listofexperiments:

1. TostudyinstrumentationandworkingofpHmeter.
2. Tostudyinstrumentationandworkingofdistillation.
3. Determinationofboilingpoint.
4. Topreparenitrobenzene.
5. Topreparem-dinitrobenzene.
6. Limittestforchlorides,sulfates
7. Determinationofmeltingpoint.
8. IdentificationofNitrogenincompounds.
9. IdentificationofHalogenincompounds.
10. EstimationofNaOHbyTitration.

TextBooks:

1. OrientLongman.Atherden LM.Bentleyand Driver'sTextbookofPharmaceuticalChemistry.New Delhi:Oxford UniversityPress
2. Vogel.Vogel'sTextbook ofMicroandSemimicro QualitativeInorganicAnalysis.Hyderabad:

ReferenceBooks:

1. Block JH, Roche E, Soine TO, Wilson CO. Inorganic Medicinal and PharmaceuticalChemistry.Philadelphia:Leaand Febiger.
2. JefferyGH,BessettJ,MendhamJ,DenneyRC.Vogel'sTextbookofQuantitativeInorganic Analysis including Elementary Instrumental Analysis. London:ELBS andLongman
3. MannFC,SaundersBC.PracticalOrganicChemistry.London:ELBS/Longman.
4. MorrisonTR,BoydRN.Organic Chemistry.NewDelhi:Prentice HallIndia.
5. RobertsJD,CaserioMC.BasicPrinciplesofOrganicChemistry.NewYork:WA.BenjaminInc.

BPA-203TPHARMACOGNOSY&PHYTOCHEMISTRY-I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit -I

IntroductiontoPharmacognosyandPlantmicroscopy

Introduction, development, present status and future scope of Pharmacognosy. Techniques inmicroscopy covering use of mountants (water and glycerine), clearing agents (chloral hydrate),chemomicroscopic reagents(stains), micrometer,quantitative microscopy

Unit –II

Introductiontoplantmetabolites

Definitions of selected botanical terms related to groups of plant constituents: Carbohydrates,glycosides,tannins,lipids,volatileoils,terpenes,resinscombinations,alkaloids,flavo noids,anthraquinones, coumarins,saponins,gumsandmucilage's.

Unit–III

Sourcesofdrugs

Terrestrial,MarineandMicrobialandabrief introduction offollowinggroupswithbiologicalsource,chemical constituents anduses ofthe drugs listed:
Thallophytes:
(a) Algae-Diatoms, Agar andAlginic Acid.
(b) Fungi-Ergot, Yeast andMushrooms.*Pteridophytes*:Malefern

Unit-IV

Spermatophytes:(a)Gymnosperms–MedicinalimportanceoffamilyPinaceae.
(c) Angiosperms–Covering important medicinal plants of families with special reference totheirbiologicalsource,majorchemicalconstituentsanduses:Apocynaceae,Compositae,Labiatae, Convolvulaceae,Liliaceae,Leguminosae,Papaveraceae,Rubiaceae,RutaceaeSolanaceae,Scrophula riaceaeandUmbelliferae.

TextBooks:

1. Atextbookof*'Pharmacognosy'*byR.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2. KokateCK,GokhaleSB,PurohitAP:*Parmacognosy*36th edn.NiraliPrakashan,Pune,India.
3. S.S. HandaTextbookofPharmacognosyVallabhPublications,NewDelhi.

ReferenceBooks:

1. Evans WC (2002):*Trease and Evan's Pharmacognosy*. 15th edn., Saunder' Elsevier Pvt Ltd. New Delhi-24, India.

2. QualityStandardsof IndianMedicinalPlants.NewDelhi:ICMR.

3. MedicinalPlantsofIndia.NewDelhi:ICMR.

BPA-204TPHARMACEUTICS-I(GENERALANDDISPENSINGPHARMACY)

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

UnitI
IntroductionandScopeof theProfession andMetrology
Introduction and scope of pharmacy profession, official compendiaand its uses in pharmacyprofession.
Introduction to units of weights and volume in metric systems, imperial systems and SI system.Simple calculation involved in preparing solutions of solids in liquids (W/V), liquids in liquids(V/V),Methodofallegation.

Unit-II
MonophasicLiquidDosagesFormulations:-
Formulation,characteristics,manufacturingprocedureincludingexamplesofinternalandexternalmonophasicdosagesform.Officialpharmaceuticalsolutions,productsfororalandtopical use including mixture, syrups, elixirs, mouth washes, gargles, throat paints, aromaticwaters, lotions and liniments, Douches, nasal and ear drops. Evaluation of monophasic liquiddosagesformulations.

UnitIII
Powderdosageforms
Official standards for powders as per IP/API, sieves and their usage in grading, bulk powders forinternalandexternaluse.SpecialpowderDustingpowdersandinsufflations,singledosepowders, effervescent powders, hygroscopic powders, Efflorecent powders, Eutactic Mixtureand granules.Evaluationofpowderdosageform.

Unit
IVa)Prescripti
on
Descriptionandpartsofaprescription,handlingtheprescription,readingtheprescription,checkingthewrittenprescription, compoundingtheprescription.
b)Incompatibilities:-
Classification,TypesandexamplesofPhysicalincompatibilities,ChemicalincompatibilitiesandTherapeuticIncompatibilities.

TextBooks: Recent editionsofthe followingbookstobe referred
1.L.Lachman,H.A.LiebermanandJ.L.Kanig,TheTheoryandPracticeofIndustrialPharmacy,LeaandFebiger,Philadelphia,U.S.A.

2.N.K. Jain, Vallabh Prakashan, Textbook of General & Dispensing Pharmacy, Edn. 2012,India.

ReferenceBooks:

1. Indian Pharmacopoeia 2007. New Delhi:Indian Pharmacopoeia Commission
2. Remington, The Science and Practice of Pharmacy, Mack Publishing Co.,U.S.A.
3.S.J. Carter, Dispensing for Pharmaceutical Students, 11^{th} and 12^{th} edition, 1967 and 1975, Pitman Books Ltd., London, U.K.

BPA-205TRASASHASTRA-I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shall consist of four units as per the syllabus. The paper setter will be settwoquestions from each Section/unit.Howeverstudentsmayaskedtoattemptonly1questionfrom each unit.Eachquestionshouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and coverthe entire syllabus. This question should have objective or short answer type questions andshallbe of20marks.

UnitI
Definition and etymologyof word Rasa, brief history of Rasa Shastra , concept of Rasa shala, conceptof Rasamandap,importance of Rasaushadhi, concept of Rasa & Rasayana, fundamental principles ofRasashastra.

Unit-II
Briefdescriptionoftechnicalterminologies(Paribhasaprakarana)
Avapa,Nirvapa,Dhalana,Bhavana,Jarana,Murcchan,Shodhana,Marana,Varitara,Rekhapurna,Apunarbhava, Uttama, Niruttha, Amritikarana, Lohitikarana, Mrta loha, Satwa patana, Shuddhavarta,Bijavarta, Rudra bhaga and Dhanvantari bhaga etc.Concept of Shodhana, Marana and, Amritikaranawith theirimportanceasper classical andmodernliterature.
DravyavargaAmlavarga,Kshiratraya,Madhuratraya,Panchamrttika,Panchagavya,Panchamrta,Ksarastaka, Dravakagana,Mitra pancaka, Raktavarga, Sweta varga,Lavanapancaka etc.

Unit-III
Briefdescriptionofyantraandtheirapplication
Ulukhalayantra,Khalvayantra,KachchhapayantraUrdhwapatanyantra,Adahapatanyantra,Jaranarth tula yantra, Dola yantra, Damaru yantra, Vidhyadhara yantra, Tiryakpatana yantra, Patalayantra,Palikayantra,Putayantra,Valukayantra,Lavanayantra,Bhudharayantra,Sthaliyantra,Swedan ayantra.

Unit-IV
BriefdescriptionandapplicationofMusha(crucible)andKosthi
Samanya Musa, Gostanimusa, Vajramusa, Maha musa, Yoga musa, Vrintak musa, Malla/pakwa musa,different types of crucibles. Satvapatana kosthi, Chullika, Patala kosthi, Gara kosthi, Angara kosthi andknowledgeofvariousheatingappliances viz.Gasstove,Hotplateandheatingmantle.
Rasashala nirman (ancient and modern concept) with respect tofGMP inaccordancetoschedule T.

TextBooks:

1. 1 Text book ofRasa Shastra by Dr. K.Ramachandra Reddy, Chaukhamba Sanskrit Bhawan, Varanasi2TextBookofRasashastrabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan, Varanasi
2. TextbookofNutanAyurvediyaRasaShastrabyDr. SantoshKumarMishra,ChaukhambhaOrientalia,Varanasi
3. Text book ofRasa Shastra by Dr. K.Ramachandra Reddy, Chaukhamba Sanskrit Bhawan, Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyofIndia,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.of IndiaPublication.

4. AyurvedSarSangraha.
5. RasaTantraSara avum Siddha PrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-213(P) RASASHASTRA-I

TeachingScheme			Credits	Marks			Duration ofEnd SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class. Followingis suggested a list of exercises out of which a minimum of 8/10 experiments must be performed by astudentduringthesemester.

Listofexperiments:

1. TostudytheclassificationofdifferentRasaDravya.
2. Tostudythe identificationofdifferentdrugsofMaharasagroup.
3. To studythe identificationofdifferentdrugsofUparasagroup.
4. Tostudythe identificationofdifferentdrugsofSadharanarasagroup.
5. Tostudythe identificationofdifferentdrugsofDhatu-Upadhatugroup.
6. Tostudythe identificationofdifferentHeatappliancesusedinAyurvedicDrugpreparation.
7. To studythePlanofPharmacy.
8. Tostudythepracticalaspect ofShodhana.
9. To study thepracticalaspectofBhavnaandmardana.
10. To studythevariousclassicaltestsandparametersofavialablesampleofBhasma.

TextBooks:

1. TextbookofRasaShastrabyDr.K.RamachandraReddy,ChaukhambaSanskritBhawan,Varanasi
2. TextBookofRasaShastra byDr.SiddhinandanaMishra ,ChaukhambaSanskritBhawan,Varanasi
3. TextbookofNutanAyurvediyaRasaShastrabyDr. SantoshKumarMishra,ChakhambhaOrientalia,Varanasi

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyofIndia,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaof IndiaPart-II, Govt.of IndiaPublication.
4. AyurvedSarSangraha.
5. RasaTantraSara avum Siddha PrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-206TDRAVYAGUNAVIGYANII (NUTRACEUTICALS)

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
Basisofnomenclatureofdravya,BasisandDerivationofsynonyms.Ecology-Classificationofgeographicalarea(desha)andsoil(bhumi),collectionofdravya,Natureandquality ofdrugtobecollected (swarupa of sangrahyadravya), Method of collection (Sangrahana vidhi), -Vegetable and Animaldrugs according to part used. Period of collection according to virya, preservation of collected dravyas and its savirytaavadhi,Storehouse(bheshajagara).

Unit-II
Idealdrug(Prashastabheshaja),Useofdifferentpartsofmedicinalplants(bheshajaprayoga,rayojyanga), Incompatibility (knowledge of viruddhatwa), principles of preparation of Aushadha yoga,Consideration of vaya, bala, linga, agni, dosha, dushya, vyadhi, koshta, dehaprakriti, Abhyasa, satwa,deshakaalandkalpanafordecidingdosageofdrugs(Matranishchiti).Anupanavyavastha,timeofadministration(Bheshajasevanakaal),routesof drugadministration (Bheshajaprayogasssssmarga)

Unit-III
Detailed knowledge of following drugs with respect to Basonym of drug, Main Synonyms, Regional Name,BotanicalName,Family,classificationofDravya(Gana)asdescribedinCharak,SushrutandBhavaprakash ai.e.Habitandhabitat/varieties,Externalmorphology,Usefulparts,Importantphytoconstituents,Rasapancha ka,ActiononDosha,Dhatu,Mala,Therapeuticindications,Amayikaprayoga andMatra (Therapeutic administrationand Dose),Name ofimportant formulations,Adverse effects, remedial measures and Shodhana (as required)
1. Ahiphena 2. Agnimantha 3.Agaru 4.Amalaki5.Apamarga6.Aragvadha7.Ardraka-sunti8.Arjuna9.Arka10.Ashvagandha11.Ashvagola12.Asoka13.Ativisha14.Bakuchi15.Baladvayam.16.Bharangi17.Bhallataka18.Bibhitaka19.Bijaka/Vijayasara 20.Bilva 21.Brahmi 22.Bhrungaraj 23.Bruhati 24.Chandanadvaya, 25.Chitraka 26.Dadima27.Danti28.Daruharidra29.Dhanyaka30.Dhataki

Unit-IV
Detailed knowledge of following drugs with respect to Basonym of drug, Main Synonyms, Regional Name,BotanicalName,Family,classificationofDravya(Gana)asdescribedinCharak,SushrutandBhavaprakash ai.e.Habitandhabitat/varieties,Externalmorphology,Usefulparts,Importantphytoconstituents,Rasapancha ka,ActiononDosha,Dhatu,Mala,Therapeuticindications,Amayikaprayoga and Matra (Therapeutic administration and Dose),Name of important formulations,Adverse effects, remedial measures and Shodhana (as required)
1. Draksha 2. Durva 3.Ela 4.Eranda 5.Gambhari6.Gokshura7.Guduchi8.Guggulu9.Haridra 10.Haritaki11.Agastya12.Akarakarabha13.Ajamoda14.Amra15.Amragandhiharidra16.Ankola17.Aparajita 18.Ashvatha19.Asthishrunkhala20.Avartaki 21.Babbula22.Badara 23.Bakula24.Bhumyamalki 25.Bimbi

26.Bijapoora 27.Bola28.Chandrashura 29.Changeri30.Vrukshamla

TextBooks

1. DravyagunavigyanabyDr.MansiDeshpandey, ChaukhambaSanskritPratisnthana,NewDelhi.
2. DravyagunavigyanaVol 1-5 byProf.Sharma P.V;publishedbyChaukhambhaBhartiAcademy,Varanasi.

ReferenceBooks

1. TheWealthofIndiaPublicationandDirectorate(CSIR,NewDelhi).
2. DatabaseonmedicinalplantsusedinAyurvedabyCCRAS,NewDelhi.
3. IndianMedicinalPlantsbyK.R.KirtikarandB.D.Basu.
4. TheAyurvedicPharmacopoeiaofIndia,GovtofIndiaPublication.
5. Aushadhnaamrupa Vigyanam by Dr. Sanjeev Kumar lale, published by Hemraj lale Indore.

BPA-214P DRAVYAGUNAVIGYANII (NUTRACEUTICALS)

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:

1. Practical'saspertopicsinthesyllabusforthecoursewillbeconductedinthelaboratoryclass.
2. Knowledgeofidentification ofdrugsmentionedintheory
3. Collectionofminimum30herbariumspecimenfromfieldvisit.
4. Compilationof adrugnotlessthan 25 pages

TextBooks-

1. DravyagunavijanabyDr.MansiDeshpandey,ChaukhambaSanskritPratisnthana,New Delhi.
2. DravyagunavijanaVol 1-5 byProf.SharmaP.V; published byChaukhambhaBharti Academy,Varanasi.

ReferenceBooks:

1. The Wealth of India Publication and Directorate (CSIR, New Delhi).2.DatabaseonmedicinalplantsusedinAyurvedabyCCRAS,NewDelhi.
3 IndianMedicinalPlantsby K.R.Kirtikar andB.D.Basu.
4.TheAyurvedicPharmacopoeiaofIndia,GovtofIndiaPublication.
5. Aushadhnaamrupa Vigyanam by Dr. Sanjeev Kumar lale, published by Hemraj lale Indore.

HS-201 ENGLISH/BUSINES SCOMMUNICATIONS

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
2	0	0	2	15	35	50	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

UNIT I

IntroductiontoBusinessCommunication: Importanceofcommunicationinbusiness,processandmodelsofcommunication,Typesofinformation, order,advise,suggestion,motivation,persuation, warning and education.

UNIT II

Business Communication: Written Communication: Letters, Cover Letter, Differencesbetweenbio-data, CV and Resume, Letter for Job Application, Thank You Letter, Letter of Complaint,Memos, Memorandum drafting. E. Communication: Email, Social Media, Website Copy andReports.

OralCommunication: Typesoforalcommunication,Barrierstooralcommunication,MassCommunication–Nature&ScopeofMassCommunication,functionofmasscommunication– Media ofmass communication.

UNIT III

Business Report Writing: Report Writing: Types, Structure of a report, Methods and ModelsofReportWriting,TechnicalProposal-
Concept,Kinds,Layout,andExamplesofTechnicalProposals.

Types of reports: Progress reports, routine reports–Annual reports–format–Analysis ofsamplereports from industry– Synopsis andthesis writing.

UNITIV

SpokenandPresentationSkills: Impromptuspeech–tacklinghesitation,shynessandnervousness in speaking –Public speaking, academic and professional presentations – Groupdiscussions–facilitatorsandimpedimentsPlanning,preparinganddeliveringapresentation,

essentials of presentation - etiquette, clarity, lively delivery – speech rhythm, speech initiatorsbody language – voice, posture & gesture, eye contact, dress codes. Speech Drill, Interviewing,Negotiatingajob offer.

TextBooks:

1. EssentialsofBusinessCommunicationbyR.PalandJSKorlahhi,SultanChand&Sons,New Delhi.
2. BasicCommunicationSkillsforTechnologybyAndreJ.Rutherford,PearsonEducationAsia,Patparganj, New Delhi.

ReferenceBooks:

1. BusinessCommunicationbyMeenakshiRamanandPrakashSingh(Oxford)
2. AdvancedCommunicationSkills,V.Prasad,AtmaRamPublications,New Delhi.

HS202DISASTERMANAGEMENT

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
2	0	0	2	15	35	50	3hrs

Note: The question paper shall consist of four units as per the syllabus. The paper setter will be settwoquestions from each Section/unit.Howeverstudentsmayaskedtoattemptonly1Questionfrom each unit.Eachquestionshouldbeof10marks.

Apart from this, the paper setter will set question No. 9 which will be compulsory and coverthe entire syllabus. This question should have objective or short answer type questions andshallbe of20marks.

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UNIT-I

Introduction:PrinciplesofDisasterManagement.NaturalDisasterssuchasEarthquake,Floods,Fire,Landslides,Tornado,Cyclones,Tsunamis,Nuclear,Chemical.AssessmentofDisasterVulnerabilityofalocationandvulnerablegroups,NationalpolicyondisasterManagement.**(6 Hrs)**

UNIT -II

Prevention, Preparedness and Mitigation measures for various Disasters, Post Disaster Relief &LogisticsManagement,EmergencySupportFunctionsandtheircoordinationmechanism,Resource&MaterialManagement,ManagementofReliefCamp,Informationsystems&decisionmakingtools.**(6Hrs)**

UNIT -III

Renewableandnon-renewableresources,Roleofindividualinconservationofnaturalresourcesforsustainablelifestyles.Useandoverexploitationof Forestresources,Deforestation, Timber extraction, Mining, Dams and their effects on forest and tribal people.**(6Hrs)**

UNIT-IV

GlobalEnvironmentalcrisis,Currentglobalenvironmentissues,GlobalWarming,Greenhouse

Effect, role of Carbon Dioxide and Methane, Ozone Problem, CFC's and Alternatives, Causes ofClimate ChangeEnergyUse: Past,presentandfuture,RoleofEngineers.**(6 Hrs)**

TEXTBOOKS:

1. DisasterManagementByG.K.GhoshA.P.H.PublishingCorporation.
2. EnvironmentalStudies,RRajgopalan,OxfordUniversityPress

REFERENCEBOOKS:

1. DisasterManagementByBNarayanA.P.H.PublishingCorporation.
2. EnvironmentalStudies,Basak,PearsonPublication.
3. SatishM.Citizen'sguidetodisastermanagement.NewDelhi:MacmillanPublishers.
4. DuggalKN.Elementsofpublichealthengineering.New Delhi: SChand& Co.

5. TrivediRK,GoelPK.Introductionto airpollution.Hyderabad:BSPublications.
6. Rao CS.Environmentalpollutioncontrolengineering.NewDelhi:WileyEastern.

SEMESTER-III

Semester-III

BPA-301T DRAVYAGUNAVIGYAN–III

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Introduction,Guna,Karmaandusesoffollowingjantavadravya(drugsofanimalorigin).

1.Kasturi2.Gorochana3.Gandhamarjaravirya4.Mrigasringa5.Bhunaga6.Mukta7.Pravala 8.Shankha9.Shukti10.Shambuka11.Varatika12.Indragopa

Introduction,knowledgeofguna-karmaand Action of following vargas.
a) Dhanyavarga b) Shakavarga c) Krutannavarga d) Manshavarga e) Phalavarga
f) Jala varga g)Dugdha varga h) Dadhi varga i) Takra varga j) Navneet varga k)Ghruta varga l)Tail varga m)Madhu varga n)Ikshu varga o)Sandhan varga

Unit-II

Ingredients and collective action of following Mishrakavarga.

Triphala, Madhuratriphala, Sugandhatriphala, Swalpatriphala, Trikatu, Trimada, Trikantaka , Trikarshika, Trijata, Chaturjata, Chaturbeeja, Chaturbhadra, Chaturushna, Shadushna, Panchakola, Panchavalkala, Panchapallava, Panchakshirivriksha, Panchatikta, Panchamahavisha, Saptaupavisha, Dashamoola, Bruhatpanchamoola, Laghupanchamoola, Trunapanchanmoola, Kantakapanchamoola, Madhyamapanchamoola, Jeevanpanchamoola, Ashtavarga,

Unit-III

Detailed knowledge of following drugs with respect to Basonym of drug, MainSynonyms, Regional Name,BotanicalName, Family,classificationofDravya(Gana)asdescribedinCharak, SushrutandBhavaprakasha i.e. Habit and habitat/varieties, Externalmorphology, Useful parts, Important phytoconstituents,Rasapanchaka, Action on Dosha,Dhatu, Mala, Therapeutic indications, Amayikaprayoga and Matra(Therapeuticadministration and Dose), Name of important formulations, Adverse effects, remedial measuresand Shodhana (as required)

1. Hingu 2.Jambu3 Jatamamsi 4. Jatiphala 5.Jeerakadvaya 6. Jyotishmati 7.Kalamegha8.Kampillaka9.Kanchanara10.Kantakari11.Kapikacchu12.Karkatakshringi13.Karpura14.Katuki15. Khadira16. Kiratatikta 17.Kumari 18. Kupilu 19. Kumkumkesara 20.Kushmanda 21. Lavanga 22. Kutaja23.Lodhra24.Madanaphala25.Manjishtha26.Maricha27.Markandika28.Musali29.Musta30.Nagakeshara

Unit-IV

Detailed knowledge of following drugs with respect to Basonym of drug, MainSynonyms, Regional

Name,BotanicalName,Family,classificationofDravya(Gana)asdescribedinCharak,SushrutandBhavaprakasha i.e
Habitandhabitat/varieties,Externalmorphology,Usefulparts,Importantphytoconstituents,Rasapanchaka,ActionnonDosha,Dhatu,Mala,Therapeuticindications,AmayikaprayogaandMatra(Therapeuticadministration and Dose), Name of important formulations, Adverse effects, remedialmeasuresandShodhana (as required)
1.Nimba2.Nirgundi3.Palasha4.Palandu5.Pashanabheda6.Patala7.Patola8.Pippali-pippalimula9.Punarnava 10.Rasna 11.Chakramarda 12.Champaka 13.Chirbilva 14.Chopachini 15.Dattura 16. Darbha17.Dhanvayasa18.Dronapushpi19.Gandhaprasarini20.Garjara21.Gojihva,22.Gorakshaganja23.Gunja 24.Hinstra25.Hrutpatri26.Indravaruni27.Ingudi28.Irimeda29.Isvari30.Japa

Textbooks

1. DravyagunavijanabyDr.MansiDeshpandey,ChaukhambaSanskritPratisnthana,NewDelhi.
2. DravyagunavijanaVol1-5byProf.SharmaP.V;publishedbyChaukhambhaBhartiAcademy,Varanasi.
3. Aushadhnaamrupa Vigyanam by Dr. Sanjeev Kumar lale, published by Hemraj lale Indore.

ReferenceBooks

1. TheWealthof IndiaPublicationandDirectorate(CSIR,NewDelhi)
2. Database on medicinal plants used in Ayurveda by CCRAS,New Delhi.
3. IndianMedicinalPlantsbyK.R.Kirtikar andB.D.Basu.

BPA-311P DRAVYAGUNAVIGYAN–III

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practicalsaspertopicsinthesyllabusforthecoursewillbeconductedinthelaboratoryclass.

1. Knowledgeofidentificationofdrugsmentionedintheory
2. Collectionofminimum50herbariumspecimenfromoutsidestate.
3. Compilationof adrugnotlessthan 25 pages

TextBooks-
1. DravyagunavijanabyDr.MansiDeshpandey,ChaukhambaSanskritPratisnthana,New Delhi.
2. DravyagunavijanaVol 1-5 byProf.SharmaP.V; published byChaukhambha Bharti Academy,Varanasi.

ReferenceBooks:
1. The Wealth of India Publication and Directorate (CSIR, New Delhi)2.DatabaseonmedicinalplantsusedinAyurvedabyCCRAS,NewDelhi.
3.MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.
4. Aushadhnaamrupa Vigyanam by Dr. Sanjeev Kumar lale, published by Hemraj lale Indore

BPA-302TPHARMACOGNOSY&PHYTOCHEMISTRY-II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Systematicstudyofcrudedrugs(Synonym,Biologicalsource,Chemicalconstituents,uses,substitutes, pharmacology etc.) andfactor affecting cultivation (altitude, temperature, humidity,rainfall, soil, fertilizers, pest and pest control), Collection, harvesting(drying) and Storage ofcrude drugs with examples. River system, mineral wealth and medicinal plants of HimachalPradesh.

Unit-II

Theoryofextraction,propertiesofsolvent,extractiontechniquesincludingMaceration,Percolation,Soxhlation,Hydro-distillation,Digestion,Decoction,Infusionandabriefintroductiontoisolationtechniques ofplant secondary metabolites.

Unit-III

A) DrugscontainingPlantmetabolites

Study of Biological source, Chemical constituents and uses of Carbohydrates-
Starch–Maize, AmritaSatwa,Honey.Gums–Babulniryas,Shalmaliniryas.
Mucliages–Isabgola,Brihatgokshura,Bilvaphal,Svetamusli.

B) StudyofBiologicalsource,ChemicalconstituentsandusesofVolatileOils
Dhanyaka,Misreya,Krishnajeerka,Svetajiraka,Ajamoda,Yavani,Lavanga,Jaiphal,Talisapatra,Tamalpatra, Vastuka, Svetachandana,Vacha, Devadaru,Jatamansi,Nilgiri.

C) Study of Biological source, Chemical constituents uses and organoleptic characters ofTannis: Ashoka,Arjuna,Khadir,Karkatasringi,Mayaphal,Haritaki,BhaibhitakandAmalaki.

Unit-IV

Study of Biological source, Chemical constituents and uses of Glycosidesa) Anthraquinoneglycosides - Svarnapatri,Kumari,Manjishta,Aragvadha,Chakramarda.

b) Cardiac -Karavira,Arka,Vanapalandu,Digitalis.
c) Saponins -Brahmi,Mandukparni,Laghugokshura,Arishtaka,Kantakari,Shatavari.
d) Flavonoids -Yashtimadhu,Bhallataka,Karanja,Kalmegh,Palash.
e) Coumarians -Bakuchi,Ajamoda.
f) Bitters -Kiratikta,Katuki,Guduchi.

TextBooks:

1. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.

2. KokateCK,GokhaleSB,PurohitAP:*Parmacognosy*36th edn.NiraliPrakashan,Pune,India.

ReferenceBooks:

1. Evans WC (2002): *Trease and Evan's Pharmacognosy*. 15th edn., Saunder' Elsevier Pvt Ltd. NewDelhi-24,India.
2. QualityStandardsof IndianMedicinalPlants.NewDelhi:ICMR.
3. MedicinalPlantsofIndia.NewDelhi:ICMR.

BPA-312P PHARMACOGNOSY& PHYTOCHEMISTRY-II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments

a) To prepare chemomicroscopic reagents like Glycerine–water, safranin, sudan–iii,phloroglucinol,iodinewater,chloralhydratesolution,picricacidsolutionetc.
b) TocarryoutMorphologyofleavesincludingleafmargins,venations,types.
c) TocarryoutMorphologystudyofDhanyaka.
d) TocarryoutMorphologystudyofKhadir.
e) TocarryoutMorphologystudyofAmalaki.
f) TocarryoutMorphologystudyofAshokaTwak,Haritki.
g) TocarryoutT.S.MicroscopyofGuduchi.
h) TocarryoutT.S.MicroscopyofLavang.
i) TocarryoutT.S.MicroscopyofMisreya.
j) Tocarryoutextractionofsomedrugsbyvariousmethodsstudiedintheory.
k) StudyofLeafcharactersliketrichomesandstomatafewdrugslistedinthetheory.
l) Tocarryoutextractionofvolatileoilscontainingdrugslisted inthetheory.

TextBooks:

1. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.
2. KokateCK,GokhaleSB,PurohitAP:*Parmacognosy*36th edn.NiraliPrakashan,Pune,India.

ReferenceBooks:

1. EvansWC(2002):*TreaseandEvan'sPharmacognosy*.15th edn.,Saunder'ElsevierPvtLtd.NewDelhi-24, India.
2. QualityStandardsof IndianMedicinalPlants.NewDelhi:ICMR.
3. MedicinalPlantsofIndia.NewDelhi:ICMR.
4.S.S. HandaTextbookofPharmacognosyVallabhPublications,NewDelhi.

BPA-303TPHARMACEUTICS-II(PHYSICALPHARMACY)

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a) Introductionof followingtopics

Refractive index, density: bulk density, tapped density, angle of repose, use of screw gauge,vernier caliper and hardness tester for determination of tablet, vatti and guttica thickness andhardness.

b) Drug Stability: Physical degradation of drugs, chemical decomposition of drugs, Stabilitytestingofdosageforms,storagemethodsand storageconditions.

Unit-II

SurfaceandInterfacialPhenomenon

Liquid interface, surface and interfacial tensions, capillary rise methods, surface free energy,spreading coefficient,wetting phenomena, contact angle, critical surface tension, detergency,surfaceactive agents.

HLB: HydrophilicLipophilicbalance:concept,applicationofHLB,requiredHLB.

Unit-III

ViscosityandRheology

Conceptofviscosity,Newtoniansystems,Lawofflow,factorsaffectingviscosity,Non-Newtoniansystems:plasticflow,pseudoplasticflow,dilatantsflow,thixotropyanditsmeasurement,negativethixotropy,spurandbulges.

Determination of flow property:-Viscometers: capillary, falling sphere, Brookfield Viscometer,cup andbobviscometerandconeandplateviscometer.

Unit-IV

a) Suspensions

Suspensionanditsclassification,advantagesandcharacteristicsofanidealsuspension,Interfacialproperiesofsolids, formulation,preparationofsuspensions.

b) Emulsions

Classificationandadvantagesofemulsion,appearanceandidentificationtest,emulsifyingagents, physical instability problem, factors which improve physical stability of emulsion andpreparationofemulsion.

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. PatrickJ.Sinko,Martin'sPhysicalPharmacy.NewDelhi:WoltersKluwerPvt.Ltd.

2. SubramanyamCVS.TextbookofPhysicalPharmacy.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. BreyWS.PhysicalChemistryandBiologicalApplications.London:AcademicPress.

2. ShoemakerDP,GarlandCW.ExperimentsinPhysicalChemistry.NewYork:McGrawHill.

3. Remington,TheScienceandPracticeofPharmacy,MackPublishingCo.,U.S.A.

BPA-313P PHARMACEUTICS-II(PHYSICALPHARMACY)

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:

Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. DeterminationofrefractiveindexofsingleorcompoundAyurvedicdrugsbyAbbe'srefracto meter.
2. DeterminationofrefractiveindexofsingleorcompoundAyurvedicdrugsbyHand'srefracto meter
3. DeterminationofviscosityofsingleorcompoundAyurvedicdrugsbyOstwaldViscometer.
4. Determinationofdensity,specificgravityofsingleorcompoundAyurvedicdrugs.
5. Determination of bulk density and tapped density of single or compound Ayurvedicdrugs.
6. DeterminationofangleofreposeofsingleorcompoundAyurvedicdrugs.
7. TopreparеanddispenseofsingleAyurvedicdrugs.
8. TopreparеanddispenseofcompoundAyurvedicdrugs.
9. Determinationofthicknessanddiameteroftablet,Vatti,Guttikabyscrewgauge,vernirecalip er.
10. DeterminationofHardnessoftabletsofsingleorcompoundAyurvedicdrugsbyMonsantohar dness tester.

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. PatrickJ.Sinko,Martin'sPhysicalPharmacy.NewDelhi:WoltersKluwerPvt.Ltd.

2. SubramanyamCVS.,J.ThimmaSettyLaboratorymanualofPhysicalpharmaceutics.NewDelh i: VallabhPrakashan.

ReferenceBooks:

1. BreyWS.PhysicalChemistryandBiologicalApplications.London:AcademicPress.

2. ShoemakerDP,GarlandCW.ExperimentsinPhysicalChemistry.NewYork:McGrawHill.

3. Remington,TheScienceandPracticeofPharmacy,MackPublishingCo.,U.S.A.

BPA-304T**PHARMACOLOGY-I**

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Introduction:Definition,scopeanddevelopmentofpharmacologicalthought(historicaldevelopment).ADME:Drugabsorption,bioavailability,bioequivalence,routeofdrugadministration, Plasma protein binding, half life of drug, biotransformation and cytochromeP450monooxygenasesystemandexcretionofdrug.MolecularPharmacology:Molecular mechanisms of drug action, receptors, theory of receptors, dose response relationship. Affinityconstants,potentiation,antagonismphenomenon.

Unit-II

PharmacologyofAutonomicNervousSystem:Autonomicneurotransmission,parasympathomimeti cs,parasympatholytics,sympathomimetics,sympatholyticsgangliontransmissionandblocker,neur omuscularblockingagentsand antispasticitydrugs.

Unit-III

PharmacologyofCentralNervousSystem:SynaptictransmissionintheCNS,generalanaesthetics,hyp nosedatives,analgesics,antipyretics,anti-inflammatoryagentsanddrugsusedingout,antiepileptics,anti-parkinsoniandrugs,psychopharmacologicalagents(antipsychotics,antianxietyandantidepressanta gents),CNSstimulantsandhallucinogens.

Unit-IV

Localanaesthetics-Classification,mechanismofaction,adverseeffects,contraindications).
(consideringB.Pharm Ayurveda this topic can be replaced with relevant topic)
In-vivo Synthesis of Histamine and antihistamine- Classification, mechanism of action, adverseeffects,contraindications.

TextBooks:

1. Tripathi KD. Essential of medical Pharmacology, New Delhi: Jaypee Brothers MedicalPublishers,

2. GhoshMN.FundamentalsofExperimentalPharmacology.Kolkata:ScientificBookAgency.

3. KulkarniSK.HandbookofExperimentalPharmacology.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. RangMP,DaleMM,RiterJM.Pharmacology.NewYork:ChurchillLivingstone.

2. BruntonLL,LazoJS,ParkerKL.GoodmanandGilman'sThePharmacologicalBasisofTherapeutics.New York:McGrawHill.

3. MycekMJ,HarveyRA,ChampePC.Lipponcott'sIllustratedReviews-Pharmacology. Philadelphia:LippincottWilliams&Wilkins.

BPA-305 RASASHASTRA-II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Definition and types of Puta: Surya puta,Candra puta, Govara puta, Lawaka puta, Kukkutaputa, Kapota puta, Varaha puta, Gaja puta, Maha puta, Kumbha puta, Baluka puta, Bhudharaputa,Laghuputa.

Unit-II

Knowledge of Parada, synonyms, occurrence, natural and artificial sources of Parada, Hingulad parade extraction,typesofrasa classification of Rasa dravya,naisargika,yougika,aupadhika(kanchuka)etcParadadosaand characteristics of Grahya-Agrahya Parada, Samanya and vishesha shodhana of Parada,Paradaastasamskara (aim, instruments, ingredients, method),Parada gati, parad vikar and prashaman andRasa bandha.

Unit-III

Murchhana and Jarana of Parada, Preparation & examination of Kajjali, types of ras ausadhis,knowledge of khalviya rasayana e.g. Tribhuvana kirthi rasa, Sutsekhar rasa, Parpati kalpa, Rasaparpati,Tamraparpati,GaganParpati,Kupipakvarasayan-rasakarpura,Rasasindhura,Samirapannagarasa,SiddhaMakardhwaja,ShilaSindoor,TamraSindoor ,SwarnaVanga,Pottalikalpa-Hemagarbha pottali.

Unit-IV

ApplicationsofElectric mufflefurnaceandfuel(diesel)dependantfurnace.Brief introduction of Quality Control, Standarization & GMP's of Rasa aushadhis.

Text Books:

1. Text BookofRasaShastrabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi
2. Text BookNutanAyurvediyaRasaShastrabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi
3. Ayurvediya Rasa Shashtra by Dr. Chandrabhushan Jha, Chaukhamba,Varanasi
4. Text Bookof RasaShastrabyDr.K..RamachandraReddy,ChaukhambaSanskritBhawan,Varanasi

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt. OfIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndiaPublication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-314P RASA SHASTRA-II

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:

Practicals as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. ToextractParada(Mercury)fromitsoreHingulabyclassicalKandukYantramethod.
2. ToprepareKajjalianditsexamination.
3. ToprepareRasaParpati.
4. ToprepareShwetaParpati.
5. Tostudytheidentificationofdifferentdrugsofratnavarga.
6. Tostudytheidentificationofdifferentdrugsofupratnavarga.
7. Tostudytheidentificationofdifferentdrugsofsuddhavarga.
8. Tostudytheidentificationofdifferentdrugsofsikatavarga.
9. Tostudytheidentificationofdifferentdrugsofksharavarga.
10. Tostudytheidentification ofdifferentdrugsofvishaandupavishavarga.

TextBooks:

1. TextbookofRasaShastrabyDr.K.RamachandraReddy,ChaukhambaSanskritBhawan,Varanasi.
2. TextBookofRasaShastrabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookNutanAyurvediyaRasaShastrabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.
4. Ayurvediya Rasa Shashtra by Dr. Chandrabhushan Jha, Chaukhamba,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-306TPATHOPHYSIOLOGY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

- **Basic principles of Cell injury and Adaptation:**
- Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury**,**Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage)**,**Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia)**,**Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage and Cell Death Acidosis &Alkalosis,Electrolyte imbalance

- **Basic mechanism involved in the process of inflammation and repair:**
- Introduction, Clinical signs of inflammation, Different types of Inflammation,Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's,Mediators of inflammation,Basic principles of wound healing in the skin,Pathophysiology of Atherosclerosis

Unit-II

- **Cardiovascular System:**
- Hypertension, congestive heart failure, ischemic heart disease (angina, myocardial infarction, atherosclerosis and arteriosclerosis)
- **Respiratory system:**Asthma, Chronic obstructive airways diseases.
- **Renal system:**Acute and chronic renal failure

Unit-III

- **Haematological Diseases:**
- Iron deficiency, megaloblastic anemia (Vit B12 and folic acid), sickle cell anemia, thalasemia, hereditary acquired anemia, hemophilia
- **Endocrine system:** Diabetes, thyroid diseases, disorders of sex hormones
- **Nervous system:** Epilepsy, Parkinson's disease, stroke, psychiatric disorders: depression, schizophrenia and Alzheimer's disease.
- **Gastrointestinal system:** Peptic Ulcer

Unit-IV

- Inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F) alcoholic liver disease.
- **Disease of bones and joints:** Rheumatoid arthritis, osteoporosis and gout
- **Principles of cancer:** classification, etiology and pathogenesis of cancer
- **Diseases of bones and joints:**Rheumatoid Arthritis, Osteoporosis,Gout
- **Principles of Cancer:** Classification, etiology and pathogenesis of Cancer

Unit-V

- **Infectious diseases:**Meningitis,Typhoid, Leprosy, Tuberculosis Urinary tract infections
- **Sexually transmitted diseases:**AIDS, Syphilis, Gonorrhea

TextBooks:

1. Vinay Kumar, Abul K. Abas, Jon C. Aster; Robbins &Cotran Pathologic Basis of Disease; South Asia edition; India; Elsevier; 2014.
2. HarshMohan; Text book of Pathology; 6th edition; India; Jaypee Publications; 2010.
3. Laurence B, Bruce C, Bjorn K. ; Goodman Gilman's The Pharmacological Basis of Therapeutics; 12th edition; New York; McGraw-Hill; 2011.
4. Best, Charles Herbert 1899-1978; Taylor, Norman Burke 1885-1972; West, John B (John Burnard); Best and Taylor's Physiological basis of medical practice; 12th ed; united states;
5. William and Wilkins, Baltimore;1991 [1990 printing].
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston;Davidson's Principles and Practice of Medicine; 21st edition; London; ELBS/Churchill Livingstone; 2010.
7. Guyton A, John .E Hall; Textbook of Medical Physiology; 12th edition; WB Saunders Company; 2010.
8. Joseph DiPiro, Robert L. Talbert, Gary Yee, Barbara Wells, L. Michael Posey; Pharmacotherapy: A Pathophysiological Approach; 9th edition; London; McGraw-Hill Medical; 2014.
9. V. Kumar, R. S. Cotran and S. L. Robbins; Basic Pathology; 6th edition; Philadelphia; WB Saunders Company; 1997.
10. Roger Walker, Clive Edwards; Clinical Pharmacy and Therapeutics; 3rd edition; London; Churchill Livingstone publication; 2003.

SEMESTER-IV

BPA-401TPHARMACEUTICALANALYSISOFAYURVEDICDRUGS-I

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
AnalyticalParametersofAyurvedicDosageFormulationsviz.Solid,LiquidandGaseousFormulations.Determinationofdifferentphysico-chemicalparametersofSolidDosageFormulations like foreign matter, loss on drying, total ash content, acid insoluble ash, extractivevalues etc.

Unit-II
Determinationof different physico-chemical parameters ofLiquidDosage Formulations likeBioling Point etc.Determination of alcohol content, volatile oil content, Optical Activity and itsdetermination.

Unit-III
Determinationofdifferentphysico-chemicalparametersofGaseousDosageFormulations.Methodsforanalysisofrawmaterialsandsingle Ayurvedicdrugs.

Unit-IV
Methodology to study toxicity of different Ayurvedic drug, metallic and herbalformulations.LimitsfortoxicitystudiesasperWHOguidelinesforexample-Mercury,lead,Arsenic.In–vivomethodsforevaluationoftoxicity.

TextBooks:
1.Atextbookof*'Pharmacognosy'* byR.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2. Munson JW. Pharmaceutical Analysis: Modern Methods. Part A & B. New York: MarcelDekker.

ReferenceBooks:
1. WillardHH,MerrittLL,DeanJA.InstrumentalMethodsofAnalysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. KempW.OrganicSepctroscopy:London:ELBS/WHFreeman&Co.

BPA-411P PHARMACEUTICALANALYSISOFAYURVEDICDRUGS-I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. TostudyLossondryingofDrug.
2. Tostudyforeign matterofDrug.
3. TostudyAcidValueofOil
4. TostudyAcetylValueofOil.
5. Methodsfor analysisofrawmaterialsandsingleAyurvedicdrugs.
6. Tostudytotalas valueofDrug.
7. Tostudyacidinsolubleashvalueof Drug.
8. To studyextractivevalueofDrug.
9. TostudyIodinevalueofOil.
10. Tostudyacid solubleashvalueofDrug.

TextBooks:

1.Atextbookof*'Pharmacognosy'* byR.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2.MunsonJW.PharmaceuticalAnalysis:ModernMethods.Part A&B.NewYork:MarcelDekker

ReferenceBooks:

1. WillardHH,MerrittLL,DeanJA.InstrumentalMethodsofAnalysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. KempW.OrganicSpectroscopy:London:ELBS/WHFreeman&Co.

HS-401HUMANVALUESANDPROFESSIONALETHICS

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	-	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Module1
CourseIntroduction-Need,BasicGuidelines,ContentandProcessforValueEducation.

1. Understandingtheneed,basicguidelines,contentandprocessforValueEducation
2. SelfExploration-whatisit?-itscontentandprocess;NaturalAcceptance
3. ContinuousHappinessandProsperity-AlookatbasicHumanAspirations
4. Rightunderstanding.
5. UnderstandingHappinessandProsperitycorrectly-Acriticalappraisalofthecurrentstatus.

Module2
UnderstandingHarmonyintheHumanBeing-HarmonyinMyself!

6. Understandinghumanbeingasaco-existenceofthesentientTandtheMaterial'Body'
7. Understandingtheneedsof Self (T) and'Body*-Sukh andSuvidha
8. UnderstandingtheBodyasaninstrumentofT(Ibeingthedoer,seerandenjoyer)
9. Understandingthecharacteristicsandactivitiesof TandharmonyinT

Module3
UnderstandingHarmonyintheFamilyandSociety-HarmonyinHuman-HumaRelationship

10. UnderstandingharmonyintheFamily-thebasicunitofhumaninteraction
11. Understandingvalues inhuman-humanrelationship:meaningofNyayaand Programforits fulfillment toensureUhhay-tripfi:Trust(Vishwas)andRespect{Sammanjasthefoundationvalues ofrelationship
12. UnderstandingthemeaningofVishwas;Differencebetweenintentionandcompetence

Module4
UnderstandingHarmonyintheNatureandExistence-WholeexistenceasCexistence

13. UnderstandingtheharmonyintheNature
14. Interconncctcdnessandmutual fulfillment amongthefourordersof nature–Recyclability andself-regulationin nature.
15. UnderstandingExistenceasCo-existence(Sah-asfitva)ofmutuallyinteractingunitsinAllpervasivespace

TextBooks:

1. The textbook: R RGaur, RSangal, GP Bagaria,2009, AFoundationCourse in HumaValuesandProfessionalEthics,ExcelBooksPrivateLimited,NewDelhi.

2. Teacher'smanual:RRGaur.RSangal,GPBagaria.2009,Teacher'sManual:AFoundatioCourseinHumanValuesandProfessionalEthics.ExcelBooksPrivateLimited.NewDelhi.VideoCDofTeacherOrientationWorkshopwillbemadeavailableonwebsite.

1.ReferenceBooks

1. IvanIllich,1974,Energy&Equity.TheTinityPress,Worcester,andHarperCollins,USA
2. E.F.Schumacher,1973,SmallisBeautful:astudyofeconomicsasfpeoplemattereBlond&Briggs, Britain.
3. SussanGeorge,1976,HowtheOtherHalfDies,PenguinPress.Reprinted1986,1991
4. DonellaH.Meadows,DennisL.Meadows,JorgenRanders,WilliamW.BchrensIII.197LimitstoGrowth-ClubofRome'sreport.UniverseBooks.
5. ANagraj,1998,JeevanVidyaekParichay,DivyaPathSansthan,Amarkantak.
6. PLDhar,RRGaur,1990,ScienceandHumanism,CommonwealthPurblishers.

Relevantwebsites,CDs,MoviesandDocumentaries

1. ValueEducationwebsite,http://www.uptu.ac.in
2. StoryofStuff,http://www.storyofsiuf.com
3. AlGore,AnInconvenientTruth.ParamountClassics,USA
4. CharlieChaplin,ModernTimes.UnitedArtists,USA
5. IITDelhi.ModernTechnology-theUntoldStory
6. AnandGandhi,Righthererightnow.Cyclewalaproduction

BPA-402TPHARMACOGNOSY&PHYTOCHEMISTRY-III

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Studyofbiologicalsource,chemicalconstituentsandusesofsecondarymetabolitesa)Alkaoidspresentin:-

Vasaka,Datura,Indrayava,Arkapatri,Kutaja,Soma(Ephedra),Patha,Puga,Maricha,Vatsanabha,Ativisha,Ahiphena,Punarnava,Shankhapuspi,SarpagandhaandDaruharidra.

b) Volatileoils aromaticoils/Resin/ResinCombinationsPresentin–

Musta,Kulanjana,Kushtha,Ardraka,Haridra,Trivrit,Vijaya,Indravaruni,Vidanga,Kampillaka,Nagakesara, Guggulu, Shallaki, Sarala, Sarjarasa and Hingu.

c) FixedoilsandWaxesPresentin–Eranda,Tila,Karanja,Jyotishmati,Madhucchishta(beeswax).

Unit-II

Evaluation of the crude drugs including Physical, Chemical, Biological evaluation and Factorsaffecting herbal drug Constituents including authentication, environment, time of harvesting,pesticides etc.

Unit-III

BriefintroductiontoRasayanaincludingitsclassificationandimportantexamples,NaturalPesticidesandAllergens(inhalants,infectants,ingestants,injectantsetc.).BriefconceptofAromatherapy.

Unit-IV

Quantitativemicroscopy

Camera lucida drawings-Concept of Vein-islet number, Vein termination number, Palisade ratio,Stomatal Number, Stomatal index, Measurement (Micrometery) of elements like Trichomes,Crystals,Xylem vessel,Fiberetc.

TextBooks:

1. Atextbookof*'Pharmacognosy'* byR.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2. Kokate CK, Gokhale SB, Purohit AP: *Parmacognosy* 36th edn.Nirali Prakashan, Pune,India.

ReferenceBooks:

1. EvansWC(2002):*TreaseandEvan'sPharmacognosy*.15th edn.,Saunder'ElsevierPvtLtd.NewDelhi-24,India.
2. QualityStandardsofIndian MedicinalPlants.NewDelhi:ICMR.
3. MedicinalPlantsofIndia.NewDelhi:ICMR.
4. S.S.HandaTextbookofPharmacognosyVallabhPublications,NewDelhi

BPA-412P PHARMACOGNOSY& PHYTOCHEMISTRY-III

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments

1. Todrawa squareof1 mmusingmicrometer.
2. Tostudyfocusingofcameralucida.
3. Toidentifyvarioustypesof stomataoffewdrugslistedinthetheory.
4. Toidentifyvarioustypesoftrichomesfewdrugslistedinthetheory.
5. TocarryoutStomatalNumberandStomatalIndexofDatura.
6. TocarryoutVein-isletNumberofVasakaandDatura.
7. TocarryoutMorphologystudyofGunja,Madhucchishta.
8. TocarryoutMorphologystudyofArdraka,Daruharidra
9. TocarryoutT.S.MicroscopyofVasaka,Daturaleaves.etc.(drugavailable)
10. TocarryoutT.S.MicroscopyofMaricha.
11. StudyofPlantcellscontentsstarch,calciumoxalateandcalciumcarbonatecrystals.
12. Tocarryoutextractionofvolatileoilslistedinthetheory.
13. To prepare chemomicroscopic reagents like Glycerine–water, safranin, sudan – iii,phloroglucinol,iodinewater, chloralhydratesolution etc.

TextBooks:

1. Atextbookof*'Pharmacognosy'* byR.K.Parmar,Vol.I,Edn.-I,P.Prakashan,India.
2. KokateCK,GokhaleSB,PurohitAP:*Parmacognosy*36thedn.NiraliPrakashan,Pune,India.

ReferenceBooks:

1. EvansWC(2002):*TreaseandEvan'sPharmacognosy*.15thedn.,Saunder'ElsevierPvtLtd.NewDelhi-24,India.
2. QualityStandardsofIndian MedicinalPlants.NewDelhi:ICMR.
3. MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.
4. S.S.HandaTextbookofPharmacognosy, VallabhPublications,NewDelhi.

BPA-403TPHARMACEUTICAL ENGINEERING

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a) Introduction

Fundamentalprinciples/laws,simplecasesofmaterialandenergybalancesappliedonsingleunits,unitconversions.

b) MixingofSolids:

Mechanismofmixinginsolids,factorsinfluencingmixing,classificationofsolidmixingequipmentsDoubleconeblender,Ribbonblender,Sigmablademixer,Planetarymixer.

Unit-II

a)Filtration

Processandapplicationoffiltration,Mechanism,Theoryoffiltration,classificationoffiltrationequipments,principle,construction,working,useofPlateandframefilterpress,Rotarydrumfilters,Metafilters.

b) Centrifugation

Application,theoryof centrifugation,classificationofcentrifuges,principle,construction,working,useofPerforatedandnonperforatedbasketcentrifuge,Semicontinuouscentrifuge,supercentrifuge.

Unit-III

a) Evaporation

Application,evaporation process, factorsaffectingevaporation, classification ofevaporators.Theoryofevaporation,heattransfercoefficient,materialandenergybalance.
Equipments:-Principle,construction,workingand use ofevaporating pan, Horizontal, verticaltubeevaporator,risingfilm,fallingfilm,forcedcirculationevaporators,multipleeffectevaporators.

Unit-IV

a) Basiclawsofheattransfer

Application,mechanismofheat flow(Conduction,convectionandradiation),principle,construction,working,useofshelltubeheatexchanger,doublepipeheatexchanger,liquidtoliquidinterchanger.
b) Materialsfor pharmaceuticalplant construction: Factorsaffectingthe choicefor selectionofmaterial,classificationofmaterialforplantconstruction.

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. LachmanL,LiebermanHA,KanigJL.TheTheoryandPracticeofIndustrialPharmacy.Philadelphia:Lea&Febiger.

2. SubrahmanyamCVS.PharmaceuticalEngineering.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. McCabeWL,SmithJC,HarrioltP.UnitOperationsofChemicalEngineering.London:McGrawHill.

2. BadgerWL,BancheroJT.IntroductiontoChemicalEngineering.London:McGrawHill.

3. BrownCG.UnitOperations.NewDelhi:CBSPublishers.

BPA-404T RASSHASTRA-III

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a) Maharasa

Identification,synonyms,occurence,properties,grahya-agrahyalakshna,samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowing maharasa: Abhraka, Vaikranta, Makshika, Vimala, Shilajatu, Sasyaka, Chapala andRasaka.

b) Uparasa

Identification,synonyms,occurrence,properties,grahya-agrahyalakshna,samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowinguprasa:Gandhaka,Gairaika,Kasisa,Kanksi,Haratala,Manahsila,AnjanaandKankustha.

Unit-IISadharanaRasa

Identification, synonyms, occurrence, properties, grahya-agrahya lakshna, samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowingsadharanarasa:Kampillaka,GauriPashana,Navasadara,Kaparda,Mrddarasrnga,Agnijara,Giri SinduraandHingula.

Unit-IIIDhatu

Identification,synonyms,occurence,properties,grahya-agrahyalakshna,samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowing:**SuddhaLoha**:Swarna,Rajata,Tamra,Loha,Mandura,**Putiloha**:Naga,Vanga,Yashada,**MishraLoha**:Kamsya, Pittala,VartaLoha.

Unit-IV

AusadhiYogaGyanam

Ingredients,manufacturingprocess,therapeuticdosesandtherapeuticusesoffollowingscompound formulations**:**Arogya Vardhini gutika, Karpura rasa, Kasturi bhairava rasa, Kumarakalyana rasa,Garbhapala rasa, Candraprabha vati, Candramrta rasa, Pratapalankeswara rasa,Pravala Pancamrta rasa, Anandbhairava rasa,Yogendra rasa, Rajamrganka rasa, Rambana rasa,Laxmivilasa rasa,VasantaKusumakararasa.

TextBooks:

1. Text Book of Rasa Shastra by Dr. Siddhinandana Mishra, Chaukhamba Sanskrit Bhawan, Varanasi.
2. Text Book of Rasa Shastra by Dr. SiddhinandanaMishra, Chaukhamba Sanskrit Bhawan, Varanasi.
3. Textbook Nutan Ayurvediya Rasa Shastra by Dr. Santosh Kumar Mishra, Chakhambha Orientalia, Varanasi.
4. Ayurvediya Rasa Shashtra by Dr. Chandrabhushan Jha, Chaukhamba,Varanasi
5. Textbook of Rasa Shastra by Dr.K.Ramachandra Reddy, Chaukhamba SanskritBhawan, Varanasi.

Reference Books:

1. The Drugs & Cosmetics Act 1940.
2. The Ayurvedic Formulary of India,Part-I & II Govt.Of India Publication.
3. The Ayurvedic Pharmacopoeia of India Part-II, Govt. of India Publication.
4. Ayurved Sara Sangraha.
5. Rasa Tantra Saraavum Siddha Prayog Sangraha, SriKrishan GopalBhawanKaleda ,Rajasthan.
6. Rasa Ratna Samuchaya by Vagbhatt, Chaukhamba, Varanasi

BPA-413P RASSHASTRA-III

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. TostudytheShodhanaprocessofMakshik.
2. TostudytheShodhanaprocessofShilajatu.
3. TostudytheShodhanaprocessofSasyaka.
4. TostudytheShodhanaprocessofGandhaka.
5. TostudytheShodhanaprocessofGairika.
6. Tostudythe ShodhanaprocessofKasisa.
7. TostudytheShodhanaprocessofKankshi.
8. TostudytheShodhanaprocessKapardika.
9. TostudytheShodhanaprocessofHingula.
10. TopreparetheBhasmaof Kapardika.

TextBooks:

1. Textbookof RasaShastrabyDr.K.RamachandraReddy,ChaukhambaSanskritBhawan,Varanasi.
2. TextBookofRasaShastrabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookNutanAyurvediyaRasaShastrabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.
4. Ayurvediya Rasa Shashtra by Dr. Chandrabhushan Jha, Chaukhamba,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.
6. Rasa Ratna Samuchaya by Vagbhatt, Chaukhamba,Varanasi.

BPA-405T DRAVYAGUNAVIGYANA–IV

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
Concept of Abhav pratinidhi dravya (drug substitution):
Detail study by comparing Dravyaguna Vigyana, morphology and phytochemistry of original and substitute drug 1) Pushkarmool- Kushtha 2)Murva- Manjistha Tvak 3) Daruharidra- Haridra
4) Bakuchi-Chakramarda 5) Bharangi-Talispatra/Kantkarimool 6) Madhuyashti-Dhataki 7) Amlavetas-Chukra 8) Kunkum- Kusumbhkusum 9)Shweta Chandan- Karpur 10) Shweta Chandan and Karpur-Raktachandana 11) Raktachandan- Ushir 12) Ativisha- Musta 13) Bhallatak- Chitrak

Controversial aspects of Ayurvedic Drugs:
Study of Controversial drugs. Genesis, factors responsible for controversy, steps to resolve controversy.
Study of following drugs including classical references, base of controversy, review of probable available candidates, resolution and conclusion.
(1) Rasna (2) Pashanbheda (3) Amalavetas (4) Brahmi (5) Murva (6) Sankhpushpi (7) Parpat (8) Priyangu (10) Kaknasa (11) Jivanti (12) Daruharidra
Knowledge of TKDL, IPR, Publications and related issues.Brief knowledge about WHOs “Essential Drug List”. Knowledge about Pharmacovigilance (ADR) in Ayurveda and conventional system of medicine

Unit-II
DetailedknowledgeoffollowingdrugswithrespecttoBasonymofdrug,MainSynonyms, Regional Name, Botanical Name, Family, classification of Dravya (Gana) asdescribedinCharak,SushrutandBhavaprakashai.e.Habitandhabitat/varieties,Externalmorphology,Useful parts,Importantphytoconstituents,Rasapanchaka,Action on Dosha, Dhatu, Mala, Therapeutic indications, Amayikaprayoga and Matra(Therapeuticadministration and Dose), Name of important formulations, Adverseeffects,remedialmeasuresand Shodhana(as required)

1.Vidari2.Vidanga3.Yastimadhu4.Yavani5.Devadaru6.Jati7.Jayapala8.Jeevanti
9.Kadali, 10.Kadamba 11.Kaidarya 12.Kamala 13.Kankola 14.Kakamachi 15.Karanja16.Karira 17.Karpasa 18. Karavira 19.Karavellaka20. Kasha 21.Kasni22.Kataka 23.Katphala 24.Kharjura25.Kitmari

Unit-III

Detailedknowledgeoffollowingdrugswithrespecttobasonymofdrug,MainSynonyms, Regional Name, Botanical Name, Family, classification of Dravya (Gana) asdescribedinCharak,SushrutandBhavaprakashai.e.Habitandhabitat/varieties,Externalmorphology,Usefulparts ,Importantphytoconstituents,Rasapanchaka,Action on Dosha, Dhatu, Mala, Therapeutic indications, Amayikaprayoga and Matra(Therapeutic administration and Dose), Name of important formulations, Adverseeffects,remedialmeasuresandShodhana(asrequired)

1.Rasona2.Saireyaka3.Shallaki4.Saptaparna5.Sarpagandha 6.Sariva7.Shalaparni8.Shalmali 9.Shankhapushpi10.Shatavari11.Shathapushpa 12.Shigru13.Shirisha14.Shyonaka 15.Thalisapatra16.Tila17.Trivrut18.Tulasi19.Tvak20.Ushira21.Vacha22.Varuna 23.Vasa24.Vata25.Vatsanabha.

Unit-IV

Detailed knowledge of following drugs with respect to Basonym of drug, MainSynonyms,RegionalName,BotanicalName,Family,classificationofDravya(Gana)asdescribed in Charak, Sushrut and Bhavaprakasha i.e. Habit and habitat/varieties,Externalmorphology, Useful parts, Important phytoconstituents, Rasa panchaka,Action on Dosha, Dhatu, Mala, Therapeutic indications, Amayikaprayoga and Matra(Therapeuticadministration and Dose), Name of important formulations, Adverseeffects,remedialmeasuresand Shodhana(as required)

1.Koshataki 2.Kokilaksha 3.Kumuda 4.Kusha 5.Lajjalu 6.Langali 7.Latakaranja 8.Latakasturi 9.Madayantika 10. Mahanimba 11.Mandukaparni 12.Mashaparni13.Mayaphala14.Methika15.Meshashrungi16.Mudgaparni17.Mulaka18. Nagabala 19. Nala20.Narikela

TextBooks:

1. DravyagunavijanabyDr.MansiDeshpandey, ChaukhambaSanskritPratisnthana,NewDelhi.
2. DravyagunavijanaVol 1-5 byProf.SharmaP.V;publishedbyChaukhambha BhartiAcademy,Varanasi.

ReferenceBooks:

1. The Wealth of India Publication and Directorate (CSIR,New Delhi)
2.DatabaseonmedicinalplantsusedinAyurvedabyCCRAS,NewDelhi.
3.MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.
4. Aushadhnaamrupa Vigyanam by Dr. Sanjeev Kumar lale, published by Hemraj lale Indore

BPA-414P DRAVYAGUNAVIGYANA–IV

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical'saspertopicsinthesyllabusforthecoursewillbeconductedinthelaboratoryclass.

1. Knowledgeofidentification ofdrugsmentioned intheory
2. Collectionofminimum30herbariumspecimenfromfieldvisit.
3. Compilationof adrugnotlessthan 25 pages

TextBooks-

1. DravyagunavijanabyDr.MansiDeshpandey,ChaukhambaSanskritPratisnthana,New Delhi.
2. Dravyaguna vijana Vol 1-5 by Prof.Sharma P.V; published by Chaukhambha BhartiAcademy,Varanasi.

ReferenceBooks:

1. The Wealth of India Publication and Directorate (CSIR, New Delhi)
2. Database on medicinal plants used in Ayurveda by CCRAS, New Delhi.
3. IndianMedicinalPlantsby K.R.Kirtikar and B.D.Basu.
4. MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.
5. Aushadhnaamrupa Vigyanam by Dr. Sanjeev Kumar lale, published by Hemraj lale Indore.

BPA-406 PHARMACOLOGY–II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
Coagulants(Alum,Chitosan)andanticoagulants(heparin,warfarin,aspirin),Antiplatelet(clopidogrel, dipyridamole,aspirin)andfibrinolyticdrugs(streptokinaseandurokinase),haematinics(iron, Vit.$B_{12,}$folic acid,Vit.C)

Unit-II
PharmacologyofEndocrineSystem:
Introduction to endocrine Pharmacology, thyroid and antithyroid agents, hormones of pancreasandoralhypoglycemics,adrenocorticosteroidsandadrenocorticalantagonist,pituitaryhormones, gonadal hormonesandtheirinhibitors,

Unit-III
Oralcontraceptivesuses,sideeffectsandmechanismofaction-Levonorgestrel,Estrogen,Progestinandhormonesregulatingcalciumhomeostasis.Parathyroidhormone(PTH),1,25-dihydroxy Vitamin D3(VitaminD3), andCalcitonin, regulate Ca++ resorption, reabsorption,absorption andexcretionfromthebone, kidney and intestine.

Unit-IV
ChemotherapyofMicrobialDiseases:Generalprincipleofchemotherapy,Sulphonamides,quinolones,pencillins,cephalosporins,aminoglycosides,proteinsynthesisinhibitors(tetracyclines),antimalarialdrug,drugsforamoebiasis,helminthiasis.Chemotherapyoftuberculosis,RTCP,leprosyandchemotherapyofantiviralagentincludingdrugsforHIVinfection,anticancerdrugs, multidrugresistance(MDR).

TextBooks:

1. TripathiKD.EssentialofmedicalPharmacology,NewDelhi:JaypeeBrothersMedical Publishers
2. GhoshMN.FundamentalsofExperimentalPharmacology.Kolkata:ScientificBookAgency.
3. KulkarniSK.HandbookofExperimentalPharmacology.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. RangMP,DaleMM,RiterJM.Pharmacology.NewYork:ChurchillLivingstone.
2. BruntonLL,LazoJS,ParkerKL.GoodmanandGilman'sThePharmacologicalBasisofTherapeutics.New York:McGrawHill.
3. Mycek MJ, Harvey RA, Champe PC. Lipponcott's Illustrated Reviews - Pharmacology.Philadelphia: LippincottWilliams&Wilkins.

INDUSTRIALTRAINING

L	T	P	Credits, assigned	
-	-	-	**2**	

Industrial training of Thirty days (30) is to be satisfactorilycompleted before a student is declaredeligible for the degree. Normally industrial training will be arranged at the end of 4^{th} semester either inone stretch ortwostretches duringendsemestervacations.

SOPs, STPsand log book preparation can be considered as a part of training.

SEMESTER-V

BPA-501THerbal Drug Technology

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a)***Studyofcultivation,collection,substitutes,adulterants,diagnosticmacroscopicandmicroscopicfeatures and phytochemical tests for identity of drugs*** –Glycyrrhiza, Digitalis, Aloe,SennaandDatura.

b) ***Studyofbotanicalsourcesincludingalternativenames,chemicalconstituentsandtherapeuticusesofthefollowingindigenoustraditional Drugs***:Amla,Behera,Harad,Ashwagandha, Babchi, Brahmi, Vasaka, Bach, Tulsi, Shatavar, Shankhpushpi, Kutaki, Kalmegh,Gokhru,Chirata,Ashoka,Jatamansi, Kuthand Gilo.

c) Good agricultural practices in cultivation of medicinal plants including Organic farming. Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

Unit-II

Study of the biological sources, chemical constituents and uses of drugs - Alkaloid ContainingDrug**s**:--***a***. *Pyridine- piperidine group*: Tabacco, Areca and Lobelia.***b***. *Tropane group*: Belladonna,Hyoscyamus,Coca.***c***. *Quinoline, isoquinoline group*:Ipecac,CinchonaandOpium.
d.*Imidazolegroup*:Pilocarpus.***e***.*Steroidalgroup*:Veratrum,KurchiBarkandGuggulu.
f.*Alkaloidalaminegroup*:EphedraandColchicum***g***.**Saponincontainingdrugs**:Senega,Dioscorea***h.*Cardioactivedrugs**:Squill,Strophanthus,Thevetia.**i.**
Anthraquinonecathartics:RhubarbandCascara***j***.**VolatileOils**:Roseoil,lavenderoil,patchoulioil,sandalwoodoil,lemongrassoil, orangeoil, jasmineoil,geraniumoil.

UnitIII: Concept of adulteration including its types and detection methods and study of adulterants in the following drugs-Orange peel, cinnamon, nutmeg, eucalyptus, cardamom,fennel, Kuth andclove.Abriefintroductionto basicfood laws inindiaandFSSAI.

Unit IV: Concept of heavy metal toxicity in Ayurvedic drugs and methods for measuring thetoxicity, plant adaptogens (history, definition and examples), Anticancer plants with examples.Sometraditional recepies/foodof Himachal Pradesh.

TextBooks:

1. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.
2. S.S. HandaTextbookofPharmacognosyVallabhPublications,NewDelhi.

ReferenceBooks:

1. Evans WC (2002): *Trease and Evan's Pharmacognosy*. 15th edn., Saunder' Elsevier Pvt Ltd. NewDelhi-24,India.
2. QualityStandardsof IndianMedicinalPlants.NewDelhi:ICMR.

3. MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.

BPA-502TPHARMACEUTICALANALYSISOFAYURVEDICDRUGS–II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	40	25	75	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
Introduction of U.V. and Visible spectrophotometry with their application in the AyurvedicPharmaceuticalIndustryandhowtheyarehelpfulinthegrowingindustryoftheAyurveda,Principle,Instrumentationof U.V.andVisiblespectrophotometry.

Unit-II
Introduction to Infrared Spectrophotometry with their sample prepration by differenttechniqueanddetectorusedinI.R.Spectrophotometryandqualitativeandquantitativeapplications inthefield of theAyurvedicPharmacy.

Unit-III
Introduction of Chromatography-History, Chromatography terms, Techniques byChromatographic bed shape, Displacement Chromatography, Techniques by physical state ofmobilephase, Techniques byseparationMechanism,SpecialTechniques.

Unit-IV
UseofChromatographic&SpectrophotometricmethodsforStandardizationandevaluatingquality ofAyurvedic Drugs and instrumental Analysis.Application, merits, demerits ofChromatographic&Spectrophotometric methods.

TextBooks:
1. KempW.OrganicSepctroscopy:London:ELBS/WHFreeman&Co.
2. MunsonJW.PharmaceuticalAnalysis:ModernMethods.PartA &B.NewYork:MarcelDekker

ReferenceBooks:
1. WillardHH,MerrittLL,DeanJA.InstrumentalMethodsofAnalysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.

BPA-511P PHARMACEUTICALANALYSISOFAYURVEDICDRUGS–II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggesteda list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

1. Tofindout$R_f$valueofdifferentsingleandcompounddrugsbyTLCmethod.
2. Todeterminepaperchromatographyofdifferent singleorcompounddrugs/formulations.
3. TodetermineMeltingpointofsulphur,borax.
4. TodeterminepHofdifferentsingleorcompound drugs/formulations.
5. Topreparestandardsolution.
6. TofindouttheRefractive indexofdifferentsingleorcompounddrugs/formulations.
7. Topreparesolventsystemforofdifferentsingleorcompounddrugs/formulations.
8. ToestablishprimaryparameterofAyurvedicDrugsasperAPI.
9. TocomparestandardgraphofsingleorcompoundAyurvedicdrugsUV.
10. TofindoutopticalrotationofsingleorcompoundAyurvedicdrugssample.

TextBooks:
1. KempW.OrganicSepctroscopy:London:ELBS/WHFreeman&Co.
2. Munson JW. Pharmaceutical Analysis: Modern Methods. Part A & B. New York: MarcelDekker

ReferenceBooks:
1. WillardHH,MerrittLL,DeanJA.InstrumentalMethodsofAnalysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.

BPA-503TPHARMACEUTICALTECHNOLOGYFORAYURVEDICDRUGS-I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a.) Ophthalmicpreparations:
Essentialcharacteristics,type,formulation,labeling,containerofophthalmicproducts-Eyedrops,eye lotion,eyeointments,eyesuspensions,contact lenssolutions.

a.) **Packingofpharmaceuticalproducts:**Packagingcomponents,typesandstabilityaspectsofpackaging,factorsinfluencingchoiceofcontainersofpackaging,evaluationofpackaging.

Unit-II

a.)Cream: Introduction,Application,Classification,techniquesusedforformulationofpharmaceuticalcream,evaluationofcream.
b.)Preservatives: Preservatives(Antioxidantsandantimicrobialagents)usedinpharmaceuticalpreparation withtheirconcentration.

Unit-III

a.)Tablet:
Formulationandclassificationofdifferenttypesoftablets,methodsofformulationprocessof tablet(granulation), In-process qualitycontroltestingoftablets.
b.)Tabletcoating: Typesofcoating,equipmentsforcoating,coatingprocess,evaluationtests forcoatingtablets.

Unit-IV

Capsules:-Hardgelatin,Softgelatin
Advantages and disadvantages of capsule dosage form, material for production of hard gelatincapsules, size of capsules, method of capsule filling, soft gelatin, capsuleshell and capsulecontent,qualitycontroltestingof capsuleandstorage of capsuledosageforms.

TextBooks: Recenteditionsofthefollowingbookstobereferred
1. LachmanL,LiebermanHA,KanigJL.TheTheoryandPracticeofIndustrialPharmacy.
2. AnselHC.IntroductiontoPharmaceuticalDosageForms.Mumbai:Verghese&Co.
3.ThakurR.TabularPharmaceutics,Vol.I,Edn.IPranavPrakashanH.P.

ReferenceBooks:

1. Aulton ME. Pharmaceutics-The Science of Dosage Form Design. London: ELBS/ChurchillLivingstone.
2. BankerGS,RhodesCT.ModernPharmaceutics.NewYork:MarcelDekker.
3. RawlinsEA.Bentley'sTextbookofPharmaceutics.London:ELBS.

BPA-512P PHARMACEUTICALTECHNOLOGYFORAYURVEDICDRUGS-I

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. PreparationandevaluationofgranulesbywetGranulationtechniques.
2. PreparationandevaluationofHerbalCream**.**
3. FillingofAyurvediccapsulebyHandoperatedcapsulefillingmachine.
4. TodeterminetheWeightvariationofsingleorcompoundAyurvedictablets.
5. To determine the friability of single or compound Ayurvedic tablets by Roche friabilatorapparatus.
6. Todeterminethedisintegrationtimeofsingleorcompound Ayurvedictablets.
7. TodeterminetheWeightvariationofsingleorcompoundAyurvediccapsules.
8. Todeterminethedisintegrationtimeofsingleorcompound Ayurvediccapsules.
9. TodeterminetheHardnessofAyurvedictabletsbyMonsantohardnesstester.
10. Todeterminetheinprocessqualitycontroltestingofsingleorcompoundtablet.

Text books: Recenteditionsofthefollowingbookstobereferred

1. LachmanL,LiebermanHA,KanigJL.TheTheoryandPracticeofIndustrialPharmacy.
2. AnselHC.IntroductiontoPharmaceuticalDosageForms.Mumbai:Verghese&Co.

ReferenceBooks:

1. AultonME.Pharmaceutics-TheScienceofDosageFormDesign.London:ELBS/ChurchillLivingstone.
2. BankerGS,RhodesCT.ModernPharmaceutics.NewYork:MarcelDekker.
3. RawlinsEA.Bentley'sTextbookofPharmaceutics.London:ELBS.

BPA-504TRASA SHASTRA-IV

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a) Ratna

Identification,synonyms,occurence,properties,grahya-agrahyalakshna,samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowingratna:Manikya,Mukta,Pravala,Tarksya,Pusaparaga,Vajra,Nilam,Gomeda,Vaidurya.

b) Uparatna

Identification, synonyms, occurrence, properties, grahya-agrahya lakshna, samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowing upratna: Suryakanta, Candrakanta, Rajavarta, Pairojaka, Sphatikamani, Trnakanta,Palanaka,Puttika, Rudhira.

Unit-II

a) Sudhavarga

Identification, synonyms, occurrence, properties, grahya-agrahya lakshna, samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowingdrugsofsudhavarga:Sudha,Sukti,Sankha,Badarasma,Mrigasrnga,Khatika,Godanti,Samudraphena,Kukkutandtwak.

b) Siktavarga

Identification, synonyms, occurrence, properties, grahya-agrahya lakshna, samanya-visheshshodhana,marana,dose,therapeuticusesandphamacopoiealstandardsofbhasmaoffollowing drugs of sikta varga: Sikta, Dugdhapasana, Nagapasana, Vyomasma, Sange Yeshab,Kouseyasma,Akika.

Unit-III

a) KsaraVarga

Identification, synonyms, occurrence, properties, grahya-agrahya lakshna, samanya-visheshshodhana,marana, dose, therapeutic uses and phamacopoieal standards of following ksara:Sarja ksara,Yavaksara,TankanaKsara,SuryaKsara.

b) VishaandUpavisha

Introduction,collectionandstorage,classification,synonyms,knowledge of its impurities, Shodhana, vishaktalakshana (if any),antidote,therapeuticandtoxicdoses,therapeuticusesandformulationsoffollowingvishaandupavisha:Vatsanabha,kuchala,jayapala,Dhatturabija,Bhang,Bhallataka,Gunja,Arka,Snuhi,

langali,Karavira,Ahiphena,Chitrakamula.

Unit-IV

a) BriefKnowledgeof standardization ofRasausadhis.

b) ConceptofPharmacovigilance anditsstatusinIndiawithreferencetoAyurvedicdrugs.

c) Schedule E-1 drugs (List).

TextBooks:

1. Textbookof RasaShastrabyDr.K.RamachandraReddy,ChaukhambaSanskritBhawan,Varanasi
2. TextBookofRasaShastrabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi
3. TextbookNutanAyurvediyaRasaShastrabyDr.SantoshKumarMishra,Chakhambha Orientalia,Varanasi
4. Ayurvediya Rasa Shashtra by Dr. Chandrabhushan Jha, Chaukhamba,Varanasi

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-513P RASA SHASTRA-IV

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggesteda list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. TostudytheShodhanaprocessofMukta.
2. Tostudythe ShodhanaprocessofPravala.
3. TopreparethepistiofPravala.
4. TostudytheShodhanaprocessofShankha.
5. TopreparetheBhasmaof Shankha.
6. TostudytheShodhanaprocessofMrigshringa.
7. TopreparetheBhasmaofMrigshringa.
8. TostudytheShodhanaprocessofKuchala.
9. TostudytheShodhanaprocessofBhallataka.
10. ToprepareYavakshara.
11. ToprepareApamargaKshara.

TextBooks:

1. Textbookof RasaShastrabyDr.K.RamachandraReddy,ChaukhambaSanskritBhawan,Varanasi
2. TextbookofRasaShastrabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi
3. TextbookNutanAyurvediyaRasaShastrabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi
4. Ayurvediya Rasa Shashtra by Dr. Chandrabhushan Jha, Chaukhamba,Varanasi

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.
6. Rasa Ratna Samuchaya by Vagbhattn Chaukhamba, Varanasi

BPA-505TFUNDAMENTALSOFBHAISHAJYAKALPANA-I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: Thequestionpapershall consistoffourunitsasperthesyllabus.Thepapersetterwill set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestionshouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and coverthe entire syllabus. This question should have objective or short answer type questions andshallbe of20marks.

Unit-I

HistoryofBhaishajyaKalpanaanditsgradualdevelopment

Bhaishajyakalpanautpatti,Bheshaja,Aushadham,Kalpana,QualitativeandquantitativeaspectsofAushadha Kalpana, Basic fundamentals of processing techniques, Yogas (compound formulation)andbenefitsofdrugcombination,Synergism,Potentiation,PharmaceuticalprocessesofAyurveda ,BhaishajyaKalpanasankshipta itihasa andKramika Vikasa.

Unit-II

AdharabhutasiddhantaofBhaishajyaKalpana-A

Paribhasha Glossary of Technical Terms: Lavanapanchaka, Lavana traya, Triphala, Trikatu, Ksharadravya,Ksharatraya,Ksharapanchaka,Ksharaashataka,Mutrastaka,AmlavargaAmlapanchaka,Panchti kta,Panchmrittika,Madhuratraya,Panchamrita,Panchgavya,Kshiratraya, Dudghavarga,Tailavarga.

Unit-III

AdharabhutasiddhantaofBhaishajyaKalpana-B

Anuktadravyagrahana, selection of drugs, drugs to be used in wet-form, general rule, vishesokta dravyagrahana, form of ausadha kalpana, naming a recipe, importance of Rasa, Guna, Virya, Vipaka, Karma
andPrabhava,bhaishajyamarga,matra,posology,anupana,aushadhasevenakala(timeofdrugadministration) ,kalpanaandtheirsaviryataavadhi(formulaeandtheirexpirydates),aushadhasamrakshanavidhi (guidelines forthestorageofmedicines), antioxidantsandpreservatives.

Unit-IV

Ausadhanirmanashala(Rasashala)andbriefintroductionofYantra

Rasashala, plan of pharmacy, section wise descriptionof yantra (machines) mentioned in differentprescribed sections in GMP, dolayantra, patalayantara, khalvayantra, saravasamputa importance ofsize reduction, mechanisms of grinding machines, disintegrator, cutter mill, roller mill, hammer mill,end runnermill, capsule filling machine, automatic capsule filling machine, rotary tabletmachine,coatingpan,Monsantohardnesstester,tabletdisintegrationtestapparatus,simpledistillati onapparatus, hot airoven.
ConceptofaushadhinirmanshalawithrespectofGMP inaccordancetoschedule T.

TextBooks:

1. Textbookof BhaishajyaKalpanaVigyanabyDr. Dr. G. Prabhakar Rao,Chaukhamba Publication, New Delhi
2. TextbookofBhaishajyaKalpanaVigyanaby Dr.SiddhinandanaMishra,ChaukhambaSanskritBhawan, Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyofIndia,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaof IndiaPart-II, Govt.of IndiaPublication.
4. Bhaishajya Ratnawali, Krishnadan Academy, Varanasi
5. AyurvedSaraSangraha.
6. RasaTantra SaraavumSiddha PrayogSangraha, SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-514(P):-FUNDAMENTALSOFBHAISHAJYAKALPANA-I

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class. Followingis suggested a list of exercises out of which a minimum of 8/10 experiments must be performed by astudentduringthesemester**.**

Listofexperiments:

1. Tostudythe workingprinciple,mechanism andusesofDolayantra.
2. To studythe workingprinciple,mechanism andusesofPatalayantra.
3. Tostudythe workingprinciple,mechanism andusesofDamruyantra.
4. To studythe workingprinciple,mechanism andusesofKhalvayantra.
5. Tostudytheworkingprinciple,mechanism andusesofVidyadharayantra.
6. To studythe workingprinciple,mechanism andusesofPutayantra.
7. To studytheworkingprinciple,mechanismandusesofPatanayantra.
8. Tostudythe workingprinciple,mechanism andusesofDisintegrator.
9. Tostudythe workingprinciple,mechanism andusesofHammermill.
10. Tostudythe workingprinciple,mechanism andusesofEndrunnermill.
11. Tostudythe workingprinciple,mechanism andusesofRollermill.
12. Tostudytheworkingprinciple,mechanism andusesofCapsulefillingmachine.
13. Tostudythe workingprinciple,mechanism andusesofGrindingmachine.
14. Tostudythe workingprinciple,mechanism andusesofTabletmakingmachine.
15. Tostudytheworkingprinciple,mechanismandusesofTablethardnessanddisintegrationtest apparatus.

TextBooks:

1. Text book of Bhaishajya Kalpana Vigyana by Dr. G. Prabhakar Rao, Chaukhamba Publication, New Delhi
2. TextBookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan, Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varana si.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyofIndia,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaof IndiaPart-II, Govt.of IndiaPublication.
4. AyurvedSaraSangraha.
5. RasaTantraSara avum Siddha PrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

SEMESTER-VI

BPA-601T PHARMACOKINETICSANDBIOPHARMACEUTICS

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a.)Introduction: Introductiontobiopharmaceuticsandpharmacokinetics,Fateofdruginthebody.Experimentalmodelsofpharmacokineticsstudies,schematicrepresentationofpharmacokineticprocessanddrugtherapeutics.

b.)Absorption: Mechanismofdrugabsorption(passivediffusion,activetransport,facilitateddiffusionandpinocytosis),factorsinfluencingGIabsorptionofdrug-pharmaceuticalandpatientrelatedfactors.

Unit-II

Pharmacokinetics:**BasicconsiderationandNonLinearPharmacokinetics:**

a.) Pharmacokinetics-Basic Considerations: Significance of plasma drug concentration timeprofile, volume of distribution and distribution coefficient, pharmacokinetics parametersclassificationofpharmacokinetics models.

b.) Non Linear Pharmacokinetics: Causesofnon-linearity, Michaelis-Menten equation,determinationofVmaxandTmax.

Unit-III

Biopharmaceutics:BioavailabilityandBioequivalence:

a.)Bioavailability: Objective,considerationandmeasurementofbioavailabilitybybothmeth ods pharmacokinetics and pharmacodynamic methods, Biopharmaceutics drugsclassificationSystem,Methodof enhancementofbioavailability.

b.) Bioequivalence: Objective, Application of Bioequivalance Studies, general principles ofbioequivalence,Criteriaforbioequivalencerequirement,Methodologyforbioequivalencest udies:-Objectiveof study,StudySubjects,Studydesignandconductofstudy.

Unit-IV

a.)Drug Excretion: Concept of clearance, mechanism of renal clearance, clearanceratio,hepaticclearance.

b.)Dissolution:-Conceptofdissolution,Theoriesofdissolution,in-vitrodrugdissolutiontestingmodels,invitrosinkconditionanditsroleandInvitro-in vivo correlations.

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. Brahmankar DM, Jaiswal SB. Biopharmaceutics and Pharmacokinetics – ATreatise.NewDelhi:Vallbah Prakashan.
2. GibaldiM.Biopharmaceutics&Pharmacokinetics.NewYork:Lea&Febiger.

ReferenceBooks:

1. RowlandMandTozerTN.ClinicalPharmacokinetics:Concept&Application.New York:Lea& Febiger.
2. SwarbrickJ.Biopharmaceutics.NewYork: Lea&Febiger.
3. ShargelL.AppliedBiopharmaceutics&Pharmacokinetics.Singaproe:McGrawHill.

BPA-602TPHARMACOLOGY& TOXICOLOGYOFAYURVEDICDRUGS-1

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Generalintroductiontopharmacologyanditsroleinthefieldof Ayurveda.Natureandsourceof drugs. Routes of drug administration such as intravenous, intra-muscular, intra-theccal, intra-dermal, intranasal, intrarectal, subcuteanous, intra-arterial, intra-spinal, intra-articular, intra-ocular etc.MechanismofDrugtransport(activeandpassive)andstorage.

Unit-II

PharmacologyofCardiovascularSystem:Digitalisandcardiacglycosides,Antihypertensivedrugs, Antianginal and Vasodilator drugs including calcium channel blockers and beta adrenergicantagonists,Antiarrhythmicdrugs,Antihyperlipedemicdrugs,Drugsusedinthetherapyof shock.

Unit-III

Steroids and Related Drugs: ACTH, corticosteroids, Androgens and anabolic steroids, Estrogens,progesteroneandoralcontraceptives,Drugs actingonthe uterus.DrugsActingonUrinarySystem:Fluid and electrolyte balance,Diuretics.

Unit-IV

TypeofdrugsforthetreatmentofGItractdiseases.Appetizers,Digestants,carminatives,Emetics, anti-emetics.Laxative & anti-diarrhoeal, Pharmacotherapy of peptic ulcer. Generalprinciplesofclinicaltoxicologyincludinginsecticidepoisoning,heavymetalpoisoning,barbiturate poisoning,narcotic drugpoisoning.

TextBooks:

1. TripathiKD.EssentialofmedicalPharmacology,NewDelhi:JaypeeBrothersMedicalPublishers,
2. GhoshMN.FundamentalsofExperimentalPharmacology.Kolkata:ScientificBookAgency.
3. KulkarniSK.HandbookofExperimentalPharmacology.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. RangMP,DaleMM,RiterJM.Pharmacology.NewYork:ChurchillLivingstone.
2. BruntonLL,Lazo JS,ParkerKL.GoodmanandGilman'sThePharmacologicalBasisofTherapeutics.NewYork: McGraw Hill.
3. Mycek MJ, Harvey RA, Champe PC. Lipponcott's Illustrated Reviews - Pharmacology.Philadelphia:Lippincott Williams&Wilkins

BPA-603BHAISHAJYAKALPNA-II

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-

IManaparibhas

a

Classificationofmana,payyamana,druvayamana,putavamana,kalamana,Magadhamana,kudava patra,kalingamana,paschatyamanaparibhasa,metricsystem,imperialsystem.

Unit-II

Dravyasangrahana

Collection of drugs, jangama dravya sangrahana, prayojyangas, agrahya dravyas, methods ofadulteration,aushdha kalpanapariksanavidhi.

Unit-III

Ausadhakalpana

Kalpanaclassification,pancavidhakashayakalpana,pancakasayayoni,swarasakalpana,putapaka swarasa, kalka kalpana, kwatha kalpana, saptavidha kasaya, kwatha churna, paniyakalpana, sadanga paniya, phanta kalpana, hima kalpana, usnodaka, tandulodaka, laksa rasakalpana, mamsarasa, vesavara, mantha kalpana, ausadha siddha paniya, yusa kalpana, arkakalpana, panaka kalpana, arka kalpana, syrups, elixirs, linctuses, pramathya, phanita, rasakriya,rasanjana,mosabbar,gudapaka,Avalehakalpana,Ghanasattva,churnakalpana,modern aspectofchurna(powders).

Unit-IV

a) Definitions of Ayurvedic, Siddha and Unani drugs, drug, patent or proprietary medicine,standardquality,misbrandeddrugs,adulterateddrugs,spuriousdrugs,misbrandedcosm etics,spuriouscosmetics,adulteratedcosmeticsasmentionedintheDrugsandCosmeticsActandRul es.

b)Provisions applicable to manufacture of Ayurvedic, Siddha and Unani Drugs, technical staff,Drugs Technical Advisory Board, Ayurvedic, Siddha and Unani Drugs Consultative Committee,Labelling,packing andlimit ofalcoholin Ayurvedic andUnaniDrugs.

TextBooks:

1. TextbookofBhaishajyaKalpanaVigyana(AScienceofIndianPharmacy)byDr.

K.RamachandraReddy,Chaukhamba.
2. TextbookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.

ReferenceBooks:
1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-611P BHAISHAJYAKALPNA-II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. ToprepareArdrakaSwarasa.
2. Toprepare Tulsiswarasa.
3. Toprepare Vasaputpakaswarasa.
4. PreparationofKalka.
5. PreparationofKwatha.
6. PreparationofHima.
7. PreparationofPhanta.
8. PreparationofShadangapaniya.
9. ToprepareSitopaladichurna.
10. ToprepareTalisadichurna.
11. Toprepare Hingvshtakachurna.
12. ToprepareChyawanprashaAvaleha.
13. Toprepare VasaAvaleha.
14. ToprepareArka.
15. TopreparePanakaKalpana.

TextBooks:

1. TextbookofBhaishajyaKalpanaVigyana(AScienceofIndianPharmacy)byDr.K.RamachandraReddy,Chaukhamba.
2. TextBookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-604TPHARMACEUTICALMICROBIOLOGY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Introduction, History and Scope of Microbiology, Microscopies, their magnification, resolution,illuminationandfilters,workingofdifferenttypesofmicroscopes(simple,compound,eclectron),micrometry.

Unit-II

Classificationofmicrobesandtheirtaxonomy–Protozoa,fungi,actinomycetes,bacteria,ricketssia spirochaetes and viruses.Nutrition, cultivation, isolation and identification of bacteria,actnomycets,fungi, viruses.Bacterial enzymes.

Unit-III

Controlofmicrobesbyphysicalandchemicalmethods.Disinfection,factorsinfluencingdisinfection,disinfectants andantisepticandtheirevaluation.
Sterilization,differentmethods,evaluationofsterilizationmethods.SterilitytestingofPharmaceuticalproducts.

Unit-IV

Microbial attach and host defence, virulence and pathogenicity, primary and specific defensivemechanisms of body (humoral and cell mediated), infection and its transmission, interferon's.ApplicationsofmicrobiologyinAyurvedicPharmacy.

TextBooks:

1. HugoandRussel.PharmaceuticalMicrobiology.Oxford:Balckwell.
2. PelczarPC.Microbiology.NewDelhi:TataMcGrawHill.

ReferenceBooks:

1. AnanthanarayanA,PanickarJ.TextbookofMicrobiology.Hyderabad:OrientLongman.
2. PrescottLM,HarleyGP,KleinDA.Microbiology.Oxford:VCBrownPublishers.
3. IndianPharmacopoeia.NewDelhi:ControllerofPublications.

BPA-612P PHARMACEUTICALMICROBIOLOGY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. TocarryoutworkingandPrincipleofCompundandBinocularmicroscope.
2. Tostudymicrometry(drawscales)
3. TostudyworkingandPrincipleofAutoclave,hotairoven,laminarairflow,incubatoretc
4. Toprepare varioustypesofculturemedia.
5. To study various sub-culturing of common aerobic and anaerobic bacteria, fungus andyeast
6. Tostudyvariousisolationandidentificationofbacteria,fungus.
7. Tocarryoutdifferentsterilizingtechniques
8. Topreparecottonplugsforsterilization.

TextBooks:

1. HugoandRussel.PharmaceuticalMicrobiology.Oxford:Balckwell.
2. PelczarPC.Microbiology.NewDelhi:TataMcGrawHill.

ReferenceBooks:

1. AnanthanarayanA,PanickarJ.TextbookofMicrobiology.Hyderabad:OrientLongman.
2. PrescottLM,HarleyGP,KleinDA.Microbiology.Oxford:VCBrownPublishers.
3. IndianPharmacopoeia.NewDelhi:ControllerofPublications.

BPA-605TADVANCEDPHARMACOGNOSY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

- **a)** IntroductiontotheStudyofmevalonicandshikimicacidpathwayswithspecialreferencetothe biosynthesisof:Tropanealkaloids and Terpenoids.
- **b)** Enzymes, its classification and Study of Biological sources, preparation and uses of thefollowingenzymes:Papain, pepsinandpancreatin.

Unit-II

- **a)** Briefintroductiontoplanttissueculturetechniques-Micropropagation,hairyrootculture,rootandshoottipcultureetc.includingnutritionalrequirementsandapplicationsofplanttissueculture.
- **b)** Phytochemical Screening: Preparation of extracts and Screening of alkaloids, saponins,cardiac glycosides, flavonoids, tannins and polyphenols, anthraquinones, amino acids inplantextracts

Unit-III

- **a)** Basic introduction to different classes of plant growth regulators like auxins, cytokinins,gibberellins,abscisicacidandtheirphysiologicalrole.Conceptofanimalethicalcommittee andits guidelines.
- **b)** StudyofPlantpesticidesincludingrodenticides,nematicides,insecticides,fungicides. Herbsashealthfoods.

Unit-IV

- **a)** Studyandapplications ofTLC,paperchromatography,columnchromatography,Gas,HPLC,centrifugalpartitionchromatography.
- **b)** Qualitycontrolofcrudedrugs:Adulterationofcrudedrugsandtheirdetectionbyorganoleptic, microscopic,physical,chemical and biologicalmethods andproperties.

TextBooks:

1. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.
2. S.SHandaTextbookofPharmacognosyVallabhPublications,NewDelhi.

ReferenceBooks:

1. Evans WC (2002): *Trease and Evan's Pharmacognosy*. 15th edn., Saunder' Elsevier Pvt Ltd. NewDelhi-24,India.
2. QualityStandardsof IndianMedicinalPlants.NewDelhi:ICMR.
3. MedicinalPlantsofIndia.NewDelhi:ICMR.
4. MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.

BPA-613P ADVANCED PHARMACOGNOSY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments

1. Tocarryoutextractivevalueof somedrugslistedin API
2. TocarryoutRefractiveindexofsomeAyurvedicdrugslisted inAPI.
3. Toprepare TLCplates byvariousmethods.
4. TocarryoutTLCstudiesofsomeAyurvedicdrugs/formulations/volatileoilsetc.listedinAPI
5. TocarryoutflorescenceanalysisofsomeAyurvediccrudedrugs/extracts.
6. TocarryoutchemicaltestofAlkaloids.
7. TocarryoutchemicaltestofSteroids.
8. TocarryouttestforSaponins.
9. TocarryoutchemicaltestforFlavonoids.
10. TocarryoutchemicaltestforTannins.
11. To carryoutforeignmatteranalysis,Lossondrying,SwellingandFoamingindexofsomesome drugslistedinAPI.
12. Tocarryoutisolationofvolatileoilandcarryoutsolubilitytest,refractiveindex,TLCprofile oftheoilobtainedcamphor,eucalyptus oil.
13. Tostudydifferent labelspertainingtoAyurvedicandModerndosageforms.

TextBooks:

1. Atextbookof *'Pharmacognosy'* byR.K.Parmar, Vol.I,Edn.-I,P.Prakashan,India.
2. KokateCK,GokhaleSB,PurohitAP:*Parmacognosy*36th edn.NiraliPrakashan,Pune,India.

ReferenceBooks:

1. Evans WC (2002): *Trease and Evan's Pharmacognosy*. 15th edn., Saunder' Elsevier Pvt Ltd. NewDelhi-24,India.
2. QualityStandardsof IndianMedicinalPlants.NewDelhi:ICMR.
3. MedicinalPlantsofIndia.NewDelhi:ICMR.
4. MedicinalPlantsofHimachalPradeshbyDr.N.S.ChauhanMinervaPublications.
5. S.SHandaTextbookofPharmacognosy VallabhPublications,NewDelhi.

BPA-606T MEDICINALCHEMISTRY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
DrugMetabolism
Introduction: Xenobiotics and general pathways of drug metabolism; Phase-I(Functionalization)andPhase-II(Conjugation).

a) Phase-I
Oxidative Reactions and Reductive Reactions with complete study of cytochrome P-450 andFlavin monoxygenaseselectrontransportsystem.

b) Phase-II
ConjugationduringdrugmetabolismlikeGlucuronicacidconjugation,sulphateconjugation,aminoacidconjugation,glutathioneconjugation,acetylconjugationandmethylconjugation.

Unit-II
AntibioticandAntimicrobialAgents
The following topics shall be treated covering chemical naming, structure activity relationship,mode of action, Nomenculature, classification, antimicrobial spectrum, drug resistance, andsynergism anduses.Theemphasiswouldbeonlyon B.P. and I.P.compounds.
a) GeneralconsiderationswithSulphonamidesandothersyntheticantimicrobialagent's.
b) DisinfectantsandAntiseptics.

Unit-III
a) Aminoglycosidesandotherantibioticseffectivemainlyagainst Gram–negativeorganisms.
b) Penicillinsandother antibioticseffectivemainlyagainstGram–negativeorganisms.

Unit-IV
a) Antineoplastic agent and Antiviral agents- Introduction to DNA, RNA and retroviruses, viralreplication,interferone.
b) Cephalosporins,Tetracyclinesandotherantibioticseffectiveagainstbothgram+positiveandgram –negativeorganisms.

TextBooks:

1. FoyeWC.PrinciplesofMedicinalChemistry.Philadelphia:Lea&Febiger.

2. BealeJM,BlockJH.Wilson andGisvold'sTextbookofOrganicMedicinalandPharmaceuticalChemistry.Philadelphia:Lippincott WilliamsandWilkins.

ReferenceBooks:

1. HanshC.ComprehensiveMedicinalChemistry – QuantitativeDrugDesign.Vol.IV.Oxford:Pergamon Press.
2. JursPC.ComputerSoftwareApplicationinChemistry.NewYork:JohnWiley&Sons.
3. PopsandPerruns.ComputerAidedDrugDesign.NewYork:AcademicPress

HOSPITAL/ PHARMACY/ AYURVEDIC MANUFACTURING UNITTRAINING

L	T	P	Credits, assigned	
-	-	-	**2**	

Hospital/Pharmacy/Ayurvedic manufacturing unit training of 15 days is to besatisfactorily completed before a student is declared eligible for thedegree. Normally hospital training will be arranged at the end of 6thsemester either in one stretch ortwostretchesduringendsemestervacations.

Traning or orientation at/ Pharmacy/ Ayurvedic Manufacturing unit is required to see and understand ancient methods of manufacturing and process.

SEMESTER-VII

BPA-701PHARMACEUTICAL JURISPRUDENCE &PHARMACEUTICALMANAGEMENT

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

ForensicPharmacy -Acts,Rules&Regulations –
Unit-I
Code of pharmaceutical Ethics:-Introduction, code, pharmacist, in relation to his job, trade, hisprofession,pharmacistoath.
TheDrugsandCosmeticsActandrules:-Introduction,definition,scheduletoactandrule,import and registration of drugs and cosmetics, manufacturing of drug specified in schedule C,ProvisionsapplicabletoAyurvedic (includingSidha),Unaniand homeopathic drugs.

Unit-II
Narcotic drugs and psychotropic substances:-Introduction, definition, authorities, prohibition,control and regulation, offences and penalities, import, export of narcotics and drugs andPsychotropicdrugs.
The Pharmacy Act:-Introduction, definition, PCI, State pharmacy councils, Registration ofpharmacist.

Pharmaceutical Management:-
Unit-III
Management and its Principles:-Characterstics, importance, levels and function ofmanagement, scientific management, principles of management, coordination, communication,motivationandleadershipqualityofmanagement.
PersonnelManagement:-
Objective,functionofpersonnelmanagement,recruitment,selectionprocess,service condition,performanceevaluation ofpersonnelmanagement.

Unit-IV
Channels of Distribution: Direct and indirect selling, types of middle man, wholesalers,retailers,moderntrendsinretailing,retaildepartmentalstore,chainstores,mailorderb usines.**Pharmacist:-**Recruitment,training,evaluation andcompensation tothepharmacist.

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. Jain,NK.TextbookofForensicPharmacy.NewDelhi:VallabhPrakashan.
2. MehtaRM.PharmaceuticalProductionManagement.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. KotlerP,Armstrong.PrinciplesofMarketing.NewDelhi:PHILearningPvtLtd
2. WadedhraBL.LawRelatingtoPatents,Trademarks,CopyrightDesignandGeographicalIndicatio ns.New Delhi:Universal LawPublishing.
3. BansalP.IPRHandbookforPharmaStudentsandResearchers.Hyderabad:PharmaBookSyndi cate.

BPA-702TPHARMACEUTICALTECHNOLOGYFORAYURVEDICDRUGS-II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Sustainedreleaseformulation:

Objectives,advantage&limitationofsustainedreleasetablets,ClassificationofSustainedreleaseformulations,factorsconsiderationsuchasphysiologicalpropertiesandbiologicalproperties and techniques for preparing sustained release formulations, evaluation of sustainedreleasetablets.

Unit-II

Liposomes:-

Introduction,therapeuticapplication,classificationofliposomes,methodofLiposomespreparationanddrugloading,characterizationofliposomes,factorsaffectingliposomes, stability of liposome including accelerated stability testing, evaluation of liposomes,commercialmanufacturing andscaleupofliposomes.

Unit-III

a.)Microsphere:

TypesofMicrosphere,polymerusedfactorsconsiderationforthepreparationofmicrosphere,objectiveofmicrosphere,differenttechniquesusedtoformulationofmicrosphere.

b.)Phytosome: Introduction, properties,advantagesof phytosomes,method of preparation,and characterizationof phytosomesandpharmaceuticalapplicationsof Phytosome.

Unit-IV

a.) StandardizationofHerbaldrugs:

Standardizationparameters,qualityassuranceandstabilitytestingofHerbaldrugsasperWHO/ICH guidelinesapplicabletothevarious herbaldrugs.

b.) **QualitycontroltestofHerbaldrugs:-**

InprocessqualitycontroltestforAyurvedictablet,Ayurvediccapsule,injectablesandliquidorals(monophasicandbiphasic).

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. JainNK.NovelandDrugDeliverySystems,NewDelhi:CBSPublishers.

2. AultonME.Pharmaceutics:TheScienceofDosageFormDesign.London:ELBS/ChurchillLivingstone.

3.ThakurR.TabularPharmaceutics,Vol.I,Edn.IPranavPrakashanH.P.

ReferenceBooks:

1. RobinsonR,LeeVHL.NovelDrugDeliverySystems.NewYork:MarcelDekker
2. CarterSJ.Cooper&Gunn'sTutorialPharmacy.NewDelhi:CBSPublishers.
3. BeanHS,BecketAH,CarlessJE.AdvancesinPharmaceuticalSciences.Vol.5.London:Academic Press.

BPA- 711P PHARMACEUTICALTECHNOLOGYFORAYURVEDICDRUGS-II

TeachingScheme			Credits	Marks			Duration of endSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. Todeterminethedissolutionofsustainedreleasetablets.
2. Todeterminethedissolutionofmarketedayurvedictablets.
3. Todeterminethedissolutionofmarketedayurvediccapsules.
4. FormulationorevaluationofMicrosphere.
5. Formulationandevaluationofshampoo.
6. Formulationandevaluationofherbalshampoo.
7. To determine the dissolution of single or compound Ayurvedic drugs/ film coatedtablets.
8. TodeterminethedissolutionofsingleorcompoundAyurvedicdrugs/entericcoatedtablets.
9. Todeterminethedisintegrationtimeofentericcoatedtablets.
10. Todeterminethedisintegrationtimeofsugarcoatedtablets.

TextBooks: Recenteditionsofthefollowingbookstobereferred

1. JainNK.NovelandDrugDeliverySystems,NewDelhi:CBSPublishers.
2. AultonME.Pharmaceutics:TheScienceofDosageFormDesign.London:ELBS/ChurchillLivingstone.

ReferenceBooks:

1. RobinsonR,LeeVHL.NovelDrugDeliverySystems.NewYork:MarcelDekker
2. CarterSJ.Cooper&Gunn'sTutorialPharmacy.NewDelhi:CBSPublishers.
3. Bean HS, Becket AH, Carless JE. Advances in Pharmaceutical Sciences. Vol. 5.London:AcademicPress.

BPA-703TPHARMACOLOGY&TOXICOLOGYOFAYURVEDICDRUGS–II

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
Drugs used in the treatment of Respiratory tract disorders. Pharmacotherapy of cough.Pharmacotherapyofbronchialasthmaandrelatedairwayinflammations.Ayurvedicapproach forthetreatmentofAsthma.

Unit-II
Drugs used in the treatment of cardiovascular system. Pharmacotherapy of hypertension.Pharmacotherapyofarrhythmia.Pharmacotherapyofcardiacfailure.Pharmacotherapyofanginapectoris.

Unit-III
Immunology and Immunological Preparations : Principles, antigens and haptens, immune system,cellular humorai immunity, immunological tolerance, antigen-antibody reactions and theirapplications. Hypersensitivity, Active and passive immunization; Vaccines- their preparation,standardizationand storage.

Unit-IV
Steroidsandrelateddrugs:Steroidalnomenclatureandstereochemistry,androgensandanabolicagents, estrogens and progestational agents, adrenocorticoids. Concept of Essential Drugs andRationalDrug use.DrugAddiction and Drug Abuse

TextBooks:

1. TripathiKD.EssentialofmedicalPharmacology,NewDelhi:JaypeeBrothersMedicalPublishers,
2. GhoshMN.FundamentalsofExperimentalPharmacology.Kolkata:ScientificBookAgency.
3. KulkarniSK.HandbookofExperimentalPharmacology.NewDelhi:VallabhPrakashan.

ReferenceBooks:

1. RangMP,DaleMM,RiterJM.Pharmacology.NewYork:ChurchillLivingstone.
2. BruntonLL,LazoJS,ParkerKL.GoodmanandGilman'sThePharmacologicalBasisofTherapeutics.New York:McGrawHill.
3. Mycek MJ, Harvey RA, Champe PC. Lipponcott's Illustrated Reviews -Pharmacology.Philadelphia:

LippincottWilliams&Wilkins

BPA-704TINSTRUMENTAL METHODS OF ANALYSIS

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

IntroductionofSpectroscopy

Nature of electromagneticradiations, the interactionbetween energyandmatter, applicationofquantummechanictheory,theabsorptionofenergybyatomsandmolecules,theemissionof radiantenergyby atomsandmolecules;ApplicationsinPharmaceutical Industry.

Ultravioletandvisiblespectrophotometry:

Electronic excitation, quantitative laws, deviations from Beer's law, graphical presentation ofdata,chromophores,photometricerror,instrumentation(lightsources,prismandgratingmonochromators, photomissive and photomultiplier tubes), applications (direct and indirectmethods,analysisofmixture).

Unit-II

FlamePhotometry:

Theory,quantitativedescription,experimentalfactorsaffectingfluorescenceintensity,relationship of fluorescence structure, instrumentation (cell, light sources, wavelength selectionanddetectors),pharmaceuticalapplications.

Unit-III

a) Infraredspectrophotometry:

Theory,characteristicabsorptionbandsoforganicfunctionalgroups,Frequencyrange,bandwidth and scan speed, concentration range and absorbance value, preparation of sample,samplecell,IRinstrumentation,(lightsources,monochromaticdetector),qualitativeandquantitativeapplicationsinpharmaceutical analysis.

b) IntroductionofAtomicabsorptionspectroscopyandapplicationsofthesetechniquesinthefieldofAyurveda.

Unit-IV

Techniques by Chromatographic bed shape 1. Column Chromatography 2. PlanarChromatography,DisplacementChromatography,Techniquesbyphysicalstateofmobilephase-

1. GasChromatography2.LiquidChromatography.

TextBooks:

1. Lee,DC.PharmaceuticalAnalysis.London:Blackwell.
2. MunsonJW.PharmaceuticalAnalysis:ModernMethods.PartA &B.NewYork:MarcelDekker

ReferenceBooks:

1. WillardHH,MerrittLL,DeanJA.InstrumentalMethodsofAnalysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. KempW.OrganicSepctroscopy:London:ELBS/WHFreeman&Co.

BPA-712P INSTRUMENTAL METHODS OF ANALYSIS

TeachingScheme			Credits	Marks			Durationof End SemesterExamination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. Tocarryout TLC of different single orcompounddrugs/formulations.
2. Tocarryoutpaperchromatographyofdifferent singleorcompounddrugs/formulations.
3. To carryoutpHofdifferentsingleorcompounddrugs/formulations.
4. TocarryoutpHofdifferentsingleorcompounddrugs/formulations.
5. Topreparestandardsolution.
6. Toprepare0.1Nsolutionofvariousreagents
7. TocomparestandardgraphofUV.
8. TocomparestandardgraphofIR.
9. TocomparestandardgraphofNMR.
10. TocomparestandardgraphofMass.

TextBooks:

1. Lee,DC.PharmaceuticalAnalysis.London:Blackwell.
2. Munson JW. Pharmaceutical Analysis: Modern Methods. Part A & B. New York: MarcelDekker

ReferenceBooks:

1. WillardHH,MerrittLL,DeanJA.InstrumentalMethodsofAnalysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. KempW.OrganicSepctroscopy:London:ELBS/WHFreeman&Co.

BPA-705TBHAISHAJYAKALPNA–III

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Ausadhakalpana

Vati kalpana, synonyms of vatie.g. gutika,varti, vataka, pinda, pindi, modaka, modern aspectofvati(tablet),coating oftablets,polishing,vartikalpana,suppositories,guggulukalpanalavanakalpana,arkalavana,narikel alavana,masikalpana,hastidantmasi,triphalamasi,ayaskrtikalpana,kshirapaka,kshara kalpana,ksharasutra, apamargaksara, snuhiksara.

Unit-II

Sneha kalpana

Ghrta, taila, sneha murcchana, ghrta murcchana, taila murcchana, sarsapataila murcchana,general method of sneha paka, mrdu paka, madhyam paka, khara paka, ama paka, dagdhapaka,patrapaka organdhapaka,suryapaka (adityapaka).

Unit-III

Sandhanakalpana

Classification of sandhana kalpana, asava and arista kalpana, preparation of asava and arista,othertypes of sandhana kalpana, sidhu, sura, prasanna, kadambari, jagala, medaka, bakkasa,varuni,sukta,chukra, kanjika,sandaki,modernaspect of alcoholicformulations.

Unit-IV

Standardizationprotocols

Protocolsforstandardizationforeachstepofdrugproductioni.e.fromtherawdrugstandardization to the standardization of finished product. Protocol-I, standardization of rawdrug,Protocol-II,SOP'sforpreparationofextracts,Protocol-III,standardizationofplantextract(partused),Protocol-IV,SOP'soffinishedproducts,Protocol-V,standardizationofformulations.In-processstandardization:SOP'sforpreparationofAsava-Arista,Churna,Avaleha,Ghrita/Taila,Guggulukalpa,Vati.Finalproductstandardization:AnalyticalspecificationsofAsava-Arista,Churna,Avaleha,Ghrita/Taila,Guggulukalpa,Vati,Lepa,Kshara&Lavana.

TextBooks:

1. TextbookofBhaishajyaKalpanaVigyana(AScienceofIndianPharmacy)byDr.K.RamachandraReddy,Chaukhamba.
2. TextbookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-713PBHAISHAJYAKALPNA–III

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practicals as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggested a list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments:

1. ToprepareNarikelalavana.
2. ToprepareArkalavana.
3. ToprepareHastidantamasi.
4. Topreparetriphalamasi.
5. ToprepareLasunaKshirapaka.
6. PreparationofGhrita.
7. PreparationofTaila.
8. Preparationof Asava.
9. PreparationofAristha.
10. PreparationofVarti.
11. PreparationofVati.
12. PreparationofGuggulukalpana.

TextBooks:

1. TextbookofBhaishajyaKalpanaVigyana(AScienceofIndianPharmacy)byDr.K.RamachandraReddy,Chaukhamba.
2. TextBookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.
4. Ayurvediya Rasa Shashtra by Chandrabhuan Jha, Chaukhamba, Varanasi

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.
6. Bhashajya Ratnavali

PROJECTWORK

L	T	P	Credits, assigned	
-	-	-	**2**	

Students will be allotted to prepare one specific Ayurvedic formulation. They will study the SOP aswell as manufacture the formulatuion by observing API norms and they will also perform QualityControltests andmake aconclusionofDrug/Formulation.

SEMESTER-VIII

BPA-801TMODERN ANALYTICAL TECHNIQUES

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

a) NuclearMagneticResonanceSpectroscopy:

An introduction to the theory of NMR, magnetic properties of the nuclear magnetic moments,absorptionofenergy,chemicalshift,shieldinganddeshielding,spin-spincoupling,NMRinstrumentation,analytical applicationin pharmaceutical analysis.

b) MassSpectrometry:

Instrumentation, Basic principle determination of the molecular formula, recognition of themolecularionpeak,fragmentation,massspectraofsimplecompounds(saturatedhydrocarbons).

Unit-II

a) AtomicAbsorptionSpectroscopy:

Theoryofabsorptionofradiantenergybyatoms,equipment,analyticalapplications.

b) PrincipleofTurbidimetryandNephlometrywiththeirInstrumentationandApllications.

Unit-III

a)AffinityChromatography

Supercritical fluid Chromatography, Techniques by separation Mechanism
1.Ion exchangeChromatography2.SizeexclusionChromatography3.EBAChromatographicseparation.

b)SpecialChromatography

SpecialTechniques-
1.ReversedphaseChromatography2.TwodimensionalChromatography3.Simulated moving bed Chromatography 4.Pyrolysis gas Chromatography 5.Fast protein LiquidChromatography6.Countercurrent Chromatography7.ChiralChromatography.

Unit-IVa)X-Ray

Thetheoreticalaspects,instrumentation,interpretationofspectraandapplicationsofX-raydiffraction inPharmacy.

b)RadioImmunoAssay(RIA)

ThetheoreticalaspectsinstrumentationanddiagnosticmedicalandpharmaceuticalapplicationsofRIA

TextBooks:

1. Lee,DC.PharmaceuticalAnalysis.London:Blackwell.
2. MunsonJW.PharmaceuticalAnalysis:ModernMethods.PartA &B. NewYork:MarcelDekker

ReferenceBooks:

1. WillardHH,Merritt LL,DeanJA.InstrumentalMethodsof Analysis.NewDelhi:CBSPublishers.
2. EwingGW.InstrumentalMethodsofChemicalAnalysis.Singapore:McGrawHill.
3. SchirmerRE.ModernMethodsofPharmaceuticalAnalysis.Vol1&2.Pennsylvania:FranklinBookCo.
4. KempW.OrganicSepctroscopy:London:ELBS/WHFreeman&Co.

BPA-811P MODERN ANALYTICAL TECHNIQUES

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practical's as per topics in the syllabus for the course will be conducted in the laboratory class.Following is suggesteda list of exercises out of which a minimum of 8/10 experiments must beperformed bya studentduring thesemester.

Listofexperiments

1. IdentificationofAminoacidsbyAscendingPaperChromatography.
2. SeparationofAminoacidsbyAscendingPaperChromatography.
3. IdentificationofsugarsbyThinLayerChromatography.
4. SeparationofsugarsbyThinLayerChromatography.
5. SeparationofactiveprincipleofDrug(Sumo)byThinLayerChromatography.
6. IdentificationofactiveprinciplebycomparingwithstandardDrug.
7. MoistureAnalysisin powderdrugs.
8. MeasurementofOpticalactivityindifferentdrugs.
9. MeasurementofRefractiveIndex.
10. Determination ofpHofvariousExtract.

TextBooks:

1. L.G.Chatten,PharmaceuticalChemistry,Vol.-1and2,MarcelDekker,NY(LatestEdition).
2. A.H.BeckettandJ.B.Stenlake,PracticalPharmaceuticalChemistry,Vol.1and2,AthlonePressofthe University ofLondon(LatestEdition).

ReferenceBooks:

1.H.Willard,L.L.,Marriott;Jr.,J.A.Dean,InstrumentalMethodofAnalysis,VanNostrandReinhold,N.Y.
2.J.W.Robinson,UndergraduateInstrumentalAnalysis,MarcelandDekkerInc.,NY,1970(LatestEdition).
3. V.M. Parikh, Absorption Spectroscopy of Organic Molecules, Addison – Wesley Publishing C0.,London,1974.

BPA-802TBHAISHAJYAKALPNA–IV

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
Pathyakalapna
Mandakalpana,yavagu,peya,vilepi,vilepiguna,anna(bhakta)kalpana,gunaofannakalpana, krisara kalpana, guna of krisara, kamblika and khada, raga-sadava, takrakalpana, Takrakalpana, ghola, guna of ghola, mathita, takra, udasvit, chacchika, katvara, dadhi kurcika takrakurcika.

Unit-II
Bahyakalpana
Lepa kalpana, doshghna lepa, visghna lepa, varnya lepa, technique of lepa application, time oflepa application, preservative of lepa, dasanga lepa, some of the examples of lepa preparation,satadhautaghrta,sahasradhautaghrta,malaharakalpana(maraham),sarjarasamalahara(ralamalahara),sikthatila,gandhakadyamalahara,atasyadiupanaha,dhupanakalpana,ointments,creams,pastes,jellies,liniments,lotions.

Unit-III
a) Netrakalpana
Seka,aschyotana,pindi(kavalika),bidalaka,aksitarpana,putapaka,anjana.
b)Mukhakalpana
Gandushaandkavalakalpana,snaihikagandusakalpana,mukhapakagandusa,indicationsof gandusaandkavala,pratisarana(manjan),pratisarana yoga,irimedaditaila.
c)Nasikakalpana
Classifications of nasya, navana nasya, avapida nasya, dhmapana nasya (pradhamana nasya), dhumanasya,marsa,pratimarsanasya,nasyadrugsmentionedbydifferentaurthors, indicationsofnasyakarma,contraindicationsofnasyakarma,nasyaausadhikalpana, procedureof nasya karma,determinationofdosagesin nasya karma,instructions for the patientsduringnasya,nasyavyapada(complications),advantagesofadequatenasyakarma.

Unit-IV
a) Dhumpanakalpana
Dhumanadi,dhumpanakalpana,dhumpanapasctakarma,preparationofdhumanetra,

Methodsofdhumpana,yogyafordhumpana,ayogyafordhumpana.

b)Vastikalpana

Classification of vastikalpana, karma vasti-kalavasti-yoga vasti, indications of asthapana vasti,contraindicationsofasthapanavasti,indicationsofanuvasanavasti,contraindicationsofanuvasana vasti, procedure of vasti karma, drugs commonly used for vasti kalpa purpose,common formulations meant for asthapana vasti, procedure of vasti, vasti pratyagama kala,features of samyaka vasti, features of asamyaka vasti, features of excess (atiyoga) vasti, post-vasti regimen, activities should be avoided after vasti karma, vasti vyapada (complications),modern aspectofenema.

TextBooks:

1. TextbookofBhaishajyaKalpanaVigyana(AScienceofIndianPharmacy)byDr.K.RamachandraReddy,Chaukhamba.
2. TextBookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritBhawan,Varanasi.
3. TextbookofBhaishjayaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrientalia,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct1940.
2. TheAyurvedicFormularyof India,Part-I&IIGovt.ofIndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndia Publication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajasthan.

BPA-812P BHAISHAJYAKALPNA–IV

TeachingScheme			Credits	Marks			Duration of endSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:

Practical'saspertopicsinthesyllabusforthecoursewillbeconductedinthelaboratoryclass.

1. To prepare different Pathya Kalpana.2.To prepareDashanglepa.
3. ToprepareSikthataila.
4. ToprepareHingulamritamalhara.5 .To prepare Sarjrasa malhara.
6. To prepare Shatdhauta ghrita.7.ToprepareAnuvasnaVas ti.
8. ToprepareAsthapanaVasti.9 .ToprepareDant manjan.
10. ToprepareAyurvedicfacepack.

TextBooks:

1. Textbookof BhaishajyaKalpanaVigyana(A Scienceof IndianPharmacy)byDr.K.RamachandraReddy,Chaukhamba.
2. Text bookofBhaishajyaKalpanaVigyanabyDr.SiddhinandanaMishra,ChaukhambaSanskritB hawan, Varanasi.
3. TextbookofBhaishajyaKalpanaVigyanabyDr.SantoshKumarMishra,ChakhambhaOrien talia,Varanasi.

ReferenceBooks:

1. TheDrugs&CosmeticsAct 1940.
2. The AyurvedicFormularyofIndia,Part-I&IIGovt.of IndiaPublication.
3. TheAyurvedicPharmacopoeiaofIndiaPart-II,Govt.ofIndiaPublication.
4. AyurvedSaraSangraha.
5. RasaTantraSaraavumSiddhaPrayogSangraha,SriKrishanGopalBhawanKaleda,Rajast han.

BPA-803TCLINICALPHARMACY

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I
ClinicalPharmacokinetics
a) Clinical laboratory tests for Liver function and Kidney function.Drug InteractionsFactors-Dragdeterminants,Hostdeterminants,Multipledrugtherapy,Methodsofinvestigatingdruginteractions, Clinical investigation of specific drug interactions,Pharmacokinetic aspects of druginteraction-Drugelimination,distribution andabsorption
Preventionofdruginteractionsingeneralpractice.
b) Drugs used in pregnancy, pediatrics and geriatrics. Management of cardiovascular disorders,CNSdisorders,Gastro-intestinaldiseasesandrespiratorydiseases.

Unit-II
Druginformationservices,documentationandcounselingofpatients
Ambulatorypatientcare:Pharmacist'sresponsibility,properuseofmedication,patientcounselling, drug utilization review, medication profiles, non-prescription drug usage, healtheducation,newandexpandeddimensions,healthcaredeliverysystems.
Patientcompliance-Noncompliance,factorsassociatedwithnoncompliance,improvingcompliance.

Unit-III
ProcurementanddistributionofdrugsinanInstitution(HospitalPharmacy)
Hospital - Definition of hospital pharmacy, organization, and facilities provided-pharmacist'sresponsibility - technical responsibilities (procurement, storage, dispensing, control, stock andinventorycontrol,manufacturingsterileproducts,investigationaldrugs,I.V.admixtures,radiopharmaceuticals,assayandqualitycontrol),administrativeandacademicresponsibilities.

Unit-IV
Intravenousadmixtures,Intravenous fluids packagingsystems,administrativesets,administrationproceduresincludingvolumecontrolmethod, piggybackmethod,patientcontrolledanalgesia,finalfilterdevices,intravenousadmixtures—additives,parenteralincompatibility,totalparenteralnutrition.

TextBooks:

1.M.RowlandandT.N.Tozer,ClinicalPharmacokinetics:ConceptsandApplications,LeaandFebiger,Philadelphia.2nd edition,3989.

2.N.ThakurLectureonClinicalPharmacy,P.Prakashan,India

ReferenceBooks:

1. R.emington,TheScienceandPracticeofPharmacy,19th edition,1995,MackPublishingCo.,U.S.A.

2. E.V.KlejinandJ.R.Jonders,ClinicalPharmacy,Elsevier/NorthHollandBiomedicalPress,NY1977.

3. E.T.Herfindal,D.R.GourleyandL.L.Hart,ClinicalPharmacyandTherapeutics,Williams'sand Wilkins,4th edition,London,1988.

BPA-804T YOGA

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Unit-I

Astangayoga:

Yama,NiyamaAsanaanditsimportanceStandingPosturesArdhakatichakrasana,Padahastasana,Ardhachakrasana,Trikonasana.SittingposturesSwasthika,Gomukhasana,Padmasana,Vajrasana,Bhadrasana,Shashankasana,Ushtrasana,Pashchimottanasana,Suptavajrasana,ardhamatsyendrasana,Siddhasana.SupinePostures Pavanamuktasana,Sarvangasana, Matsyasana, Halasana, Chakrasana, Shavasana, Setubandhasana. Prone posturesBhujangasana,Shalbhasana, Dhanurasana,Makarasana.

Unit-II

Suryanamaskara–procedureandbenefits.

Unit-

IIIPranayam:

Benefitsofpranayama,timeofpractice,avara-pravara-madhyamalakshana,yukta-ayuktalakshanaNadishudhiPranayama.

Unit-IV

Kumbhakabheda–suryabhedana, ujjayi, sheetali, Sitkari, Bhastrika, Bhramari,Nadishudhilakshana

TextBooks:

1. YogavumPranayamCikitsayaRahasayabyDr.AnuplataSingla.
2. Pranayam.TheModulator oflifebyDr.SarveshKumarAggarwal.

ReferenceBooks:

1. YogChikitkaavumUdharRogNivaranabyAcharayaVishvnathDevadi.
2. HathYogPradipikabyDr.SarveshKumarAggarwal.
3. YogaandNaturopathybyDr.ChanderbhanSharma.

BPA-813P YOGA

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:
Practicalsaspertopics in the

syllabusforthecoursewillbeconductedinthelaboratoryclass.Practicaldemonstrationof

someofthementionedAsana,Pranayamas.

TextBooks:

1. YogavumPranayamCikitsayaRahasayabyDr.AnuplataSingla.
2. Pranayam.TheModulator oflifebyDr.SarveshKumarAggarwal.

ReferenceBooks:

1. YogChikitkaavumUdharRogNivaranabyAcharayaVishvnathDevadi.
2. HathYogPradipikabyDr.SarveshKumarAggarwal.
3. YogaandNaturopathybyDr.ChanderbhanSharma.

BPA-805T HERBALCOSMETICS

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3	0	0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Theory

Unit-I
Introduction and importance of cosmetics as per description in Ayurvedic texts. Study of different medicinal plants described for use as cosmetics such as chandan, padmak, manjistha, sariva, mulathi, nagkesar etc.as mentioned under varnya mahakashaya.

Unit-II
Description of different classical formulations described for various cosmetic purposes such asubtans,lepa,oils, creams etc.

Unit-III
Study of various preparations used as mouth fresheners, face packs, hair oils, creams, lotions,pastes.

Unit-IV
StudyandevaluationparametersofmoderntechnologyinpreparationofcosmeticssuchasCream, ShampooandGel.

Unit-V
IntroductionofAFIanditsimportance.
StudyofdifferentdosageformsdescribedinAFI.
DosesofdifferentdosageformsdescribedunderAFI.
Shelflifeof differentAyurvedicdosageforms asper API/AFI.

TextBooks:

1. RelevantportionsofCharaka,Sushruta,Vagbhata,Sarngadhara,Bhavaprakasha,Yog aratnakara,Madhavanidana andBhelasamhita
2. AFI Part.I & II and and API (all Volumes)
3. RelevantpartsofbasictextsChakradutt,BhaishjayaRatnawalietc.

ReferenceBooks:

1. DatabaseonmedicinalplantsCCRAS.

BPA-814P HERBAL COSMETICS

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
0	0	3	2	25	75	100	3hrs

Note:

Practical'saspertopicsinthesyllabusforthecoursewillbeconductedinthelaboratoryclass.

1. Topreparеubtans(facepack)
2. Topreparеherbalcream.
3. Topreparеherbaltoothpaste.
4. Topreparehairoil.
5. Topreparеherbalshampoo.
6. Topreparеherbalsoap.
7. Topreparemouthfresheners.
8. Topreparehandsanitizer.
9. Topreparеherballoation.
10. To prepareherbalgel.

TextBooks:

1.RelevantportionsofCharaka,Sushruta,Vagbhata,Sarngadhara Samhita,Bhavaprakasha,Yogaratnakara.

ReferenceBooks:

1. DatabaseonmedicinalplantsCCRAS.

BPA-806TMARKETINGMANAGEMENT

TeachingScheme			Credits	Marks			Duration ofEndSemester Examination
L	T	P/D	C	Sessional	EndSemester Examination	Total	
3		0	3	25	75	100	3hrs

Note: The question paper shallconsist of four units as per the syllabus. The paper setter will set two questions from each Section/unit. However students may be asked to attempt only 1questionfromeach unit. Eachquestion shouldbeof10marks.
Apart from this, the paper setter will set question No. 9 which will be compulsory and covertheentire syllabus.Thisquestionshouldhaveobjective orshortanswer type questionsand shallbe of20marks.

Theory

Unit-I
ThemotivationandBehaviourofindividualsandgroupsinorganizations.TheprinciplesandModelsofHR MandPersonnelManagement.

Unit-II
The Effective Recruitment, Selection, Appraisal and Reward of Employees. The Issue of ControlandEffectivehandlingandManagementofEmployee GrievancesandDiscipline

Unit-III
TheIdentificationofTrainingandDevelopmentalneeds,ContinuousProfessionalDevelopment,lifelonglearningandPersonalDevelopment.

Unit-IV
EmployeeRepresentation,Participation,CommitmentandInvolvement.Labourlawsasapplicabletoindustriesin India

TextBooks:
1. PhilipKotlerBookonMarketmanagement.

PROJECTWORK

L	T	P	Credits, assigned	
-	-	-	**2**	

Note: Students will be allotted to prepare one specific Ayurvedic formulation. They will study the SOP as well as manufacture the formulatuion by observing API norms and they will also perform Quality Control tests and make a conclusion of Drug/Formulation.