GOVT. BILASA GIRLS' P.G. (Auto.) COLLEGE

Link Road, Bilaspur (C.G.)
Phone No. : 07752-224249, Website : www.bilasagrilscollege.ac.in

शासकीय बिलासा कन्या स्नातकोत्तर महाविद्यालय
बिलासपुर (छ.ग.)

SYLLABUS

B.Sc. Clinical Nutrition (C.N.)
Semester - III & IV

2021-22

Rules and Regulations for the Semester System at the Graduation Level

1. These subjects are compulsory for all students:-
   (a) Environmental Studies (I Semester)
   (b) English Language (II and III Semester)
   (c) Hindi Language (IV and V Semester)
   (d) Skill Based Course (VI Semester)
2. In each semester there will be only one theory paper in each elective Subject.
3. For Honours Degree Course, there will be one additional theory paper in each semester i.e. semesters, III to VI.

   For Honours Degree Course, separate practical classes will be held round the year but the examinations shall be held only in even semesters i.e. semesters II, IV and VI.
4. **Marks Pattern:-**
   (i) For non practical subjects, each theory paper will be of 100 marks i.e. 80 External + 20 Internal.
   (ii) For practical subjects, each theory paper will be of 75 marks i.e. 60 External + 15 Internal.
   (iii) Practical examination will be of 50 marks. Practical Classes will be held round the year but examination shall be held only in even semesters i.e. semesters II, IV and VI.
5. **Theory Examination:-**

   Duration for theory examination shall be of two and half hours.
6. **Practical Examination:-**

   Duration for Practical examination shall be as suggested in the syllabi.
7. **Admission Period:-**
   (i) Admissions in the First Semester shall be completed before 15th of July every year.
   (ii) Admissions in Semesters i.e. II, III, IV, V and VI shall be completed within 7 days after the completion of examinations on the provisional basis.
   (iii) The provisional admission shall be regularized within 7 days from the date of declaration of result.
   (iv) Request for permission for late admission shall not be entertained.
8. **Schedule of Classes-**
   (i) I Semester's classes will be commenced from 16th of July every year
   (ii) III and V Semester's classes will be commenced from 2nd July every year.
   (iii) II, IV and VI Semester's classes will be commenced from 2nd January every year.
   (iv) All the classes shall be continued till seven days prior to the commencement of the examination.
9. **Examination Schedule- Tentative Schedules of examinations are as under-**
   (i) Odd semester (I, III & V)- 20th November to 20th December.
   (ii) Even semester (II, IV & VI) - 15th April to 14th May.
10. **Examination Pattern -**
   (a) Questions will be asked Unit wise and Section wise. Questions will be set from all Units Covering the entire syllabi.
   (b) For non practical subjects, maximum marks will be 80 (External).
   (c) For the practical based subjects, maximum marks will be 60 (External).
   (d) In each theory paper there will be three sections and the marks distributed for different sections will be in the following pattern –

Theory (Non- Practical):- There will be three sections A, B and C in the question paper.
Section - A Objective Type/ In few words (30 words)

There will be 15 questions to be set, three from each unit and 10 to be attempted. Each question will carry 2 marks.

Section - B Short Answer Type (60 words)
There will be 5 questions to be set, 1 from each unit and all five questions to be attempted. Each question will carry 6 marks.

Section - C Long Answer / Eassy Type Question
There will be 5 questions to be set, 1 from each unit and 2 to be attempted. Each question will carry 15 marks.

Marks Scheme for - Non-practical subject –

Types of Questions	Question to be set from each Unit	Total No. of Questions	Questions to be solved	Marks assigned	Total Marks
Objective / In few words	03	15	10	02	20
Short Answer Type Questions	01	05	05	06	30
Long / Essay type of questions	01	05	02	15	30
					Total - 80

(i) Theory (Practical Subject):- There will be three sections A, B and C in the question paper.

Section - A Objective Type/ In few words (30 words)

There will be 15 questions to be set, three from each unit and 10 to be attempted. Each question will carry 2 marks.

Section - B Short Answer Type (60 words)

There will be 5 questions to be set, 1 from each unit and all five questions to be attempted. Each question will carry 4 marks.

Section - C Long Answer / Eassy Type Question

There will be 5 questions to be set, 1 from each unit and 2 to be attempted. Each question will carry 10 marks.

Marks Scheme for - Practical Subject –

Types of Questions	Question to be set from each Unit	Total No. of Questions	Questions to be solved	Marks assigned	Total Marks
Objective / In few words	03	15	10	02	20
Short Answer Type Questions	01	05	05	04	20
Long / Essay type of questions	01	05	02	10	20
					Total - 60

For question papers of compulsory papers of General group subjects i.e. Environmental Studies, English Language, Hindi Language and Skill Based Course, the pattern of question shall be applicable as suggested by the concerned Board of Studies.

(ii) Practical

	Each Practical
Laboratory Note Book / Project	10
Vive voce	10
Lab work / Field work	30
	Total - 50

(e) In odd semester examination, a candidate shall appear in papers of odd semester(s) only. Similarly in even semester examinations, a candidate shall appear in papers of even semester(s) only. Papers of odd and even semesters shall not be confined in one examination.

(f) Minimum passing marks for external/ semester end theory and practical shall be 34%.

(g) There shall be provision of 3 grace marks and it would be distributed in maximum two theory Papers / Practical.

Internal Assessment

- Internal Tests are compulsory for theory papers and must be held as per following calendar:-

Odd Semesters 1st Test - August, 2nd Test - October and 01 Assignment (during semester)

Even Semesters 1st Test - February, 2nd Test - March and 01 Assignment (during semester)

- Each test & Assignment will be of 20 marks for the subjects without practical & 15 marks for the subjects having practicals. Average of the marks obtained in the best of two tests & assignment shall be incorporated as the final marks. Qualifying marks is 40%.
- If a candidate failed to attend the test on bonafide grounds, one special test may be arranged on the production of relevant documents, before submission of application forms and fees to the office.
- The Unit tests/Assignment marks to be sent to the examination cell of the college as per notification to be issued by the Principal/ Controller Examination from time to time.
- If a candidate (whose status is Regular / Ex/Supplementary) failed in First Year of the current session (2013-14) of annual system will be appeared in the first semester examination as ex-student with under the rules and regulations of Semester System. Number of Internal Test of passed year (2013-14) will not be incorporated or carried forward.

	Non Practical Subject		Practical Subject	
	External	Internal	External	Internal
MAX MARKS	80	20	60	15
MIN MARKS	28	08	21	06

Eligibility criteria for appearing in the examinations

(i) A candidate should have 75% of attendance both in theory and practical classes. 65% attendance may be considered only on special circumstances and on certification by the Principal of the college.

(ii) A candidate shall have to qualify in the internal tests securing at least 40% marks.

(iii) A candidate shall be allowed to appear in those papers only in which she has secured qualifying marks in internal test.

(iv) If a candidate after taking admission in 1st semester could not continue the classes or could not obtain eligibility cannot appear in the 1st semester examinations. In such cases the student will not be allowed to continue in second semester and she has to continue the classes and obtain eligibility in 1st semester again in next academic year as ex-student.

11. Lecture Periods /Classes

There shall be a minimum of 50-60 hours Classes for each theory papers in respective course. Minimum of 50-60 hours shall be for each practical paper. This shall be strictly adhered to.

12. Other Guidelines

(i) There will be no provision for Revaluation, Supplementry or Betterment (Division Improvement).

(ii) A candidate has to clear all the papers within 12 semesters (six years) from the year of first admission in the programme.

(iii) A candidate will choose Honours subject just before the start of third semester from any one of the three elective subjects /group selected by her in the first semester. A candidate can change the Honours subject within 15 days from the date of admission in the third semester.

(iv) The system of credit of ten point scale examination marks in the final mark sheet shall be introduced only after its formal approval by the competent authorities.

(v) The system of Choice based credit system and Gradation system shall be introduced only after its formal approval by the competent authorities.

For Honours Degree Course (Total Marks: 2800).

13. Admission -

The process of admission in Honours Degree Course will be as follows -

(i) Student shall select course (Pass Course / Honours Degree Course) at the time of first admission in the college.

(ii) Admission shall be on merit basis after receiving the application from students.

(iii) Number of seats for Honours Degree Course will be decided as per the Govt. Rules.

(A) Each theory Paper (Non Practical Subject)

Each Theory Paper		*Internal Assessment*	
Full Marks	Minimum Passing 34%	Full Marks	Minimum Marks 40%
80	28	20	08

(B) Each theory Paper (Practical Subject)

Each Theory Paper		*Internal Assessment*	
Full Marks	Minimum Passing 34%	Full Marks	Minimum Marks 40%
60	21	15	06

(C) Each Practical Paper

Minimum Passing Percentage	*Full Marks*	*Minimum Passing Marks*
34%	50	17

(D) Grace Marks

Total/Maximum 03 in two theory paper/practical.

Amendments in Promotion Rules for Semester System at the Graduation Level

(a) A Candidate is eligible to continue the second semester classes immediately after the 1st Semester examinations and can appear in the 2nd semester examinations notwithstanding the number of arrear papers in 1st semester provided she must have appeared in the 1st semester examination.

(b) A candidate will be promoted to 3rd semester with not more than two papers of 1st semester and she will continue to attend classes of 3rd semester provisionally. She will be allowed to get final admission in the 3rd semester with maximum of four back papers in all 1st semester and 2nd semester.

(c) A Candidate is eligible to continue the 4th semester classes immediately after 3rd semester examination and can appear in the 4th semester examination with maximum 2 back papers in 1st semester and/or any numbers of back papers in 2nd and 3rd semester.

(d) A candidate will be promoted in 5th semester with not more than 2 back papers in 3rd semester and not more than 4 back papers in all 3rd and 4th semeser provided she has cleared 1st and 2nd semester examination.

(e) A candidate is eligible to continue the 6th semester immediately after the 5th semester examination and can appear in 6th semester examination with maximum of 2 back papers in 3rd semester and/or any number of back papers in 4th and 5th semester examination.

(f) If a Candidate of 6th Semester is passed in all the semesters except the 5th Semester with back in only one subject, she is allowed to appear in the back paper of the 5th Semester with the examination of 6th Semester.

(g) The students at the UG Level can view their valued answer copies and apply for the **Challenged Valuation** within 03 days from the date of the declaration of the result.

(h) A candidate will be eligible to get Graduation and Graduation Honours degree after passing all the six semester examination. For cleaning all semester papers a candidate will be given a period 6 years (12 semesters) from the year of first admission.

सेमेस्टर स्नातक स्तर प्रमोशन नियम

प्रथम सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर में छात्राओं का प्रवेश छ.ग. शासन के प्रवेश नियम के आधार पर किया जावेगा।

द्वितीय सेमेस्टर में प्रवेश की पात्रता:-

- विद्यार्थी को प्रथम सेमेस्टर की परीक्षा के तत्काल बाद कितने भी विषयों में बैक के साथ द्वितीय सेमेस्टर में अध्ययन की पात्रता होगी, बशर्ते वह प्रथम सेमेस्टर की परीक्षा में शामिल हुआ हो।

तृतीय सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर में 02 से अधिक विषयों में बैक नही होना चाहिए।
- प्रथम एवं द्वितीय सेमेस्टर में सम्मिलित रूप से 04 विषयों से अधिक में बैक न हो।

चतुर्थ सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर में 02 से अधिक विषयों में बैक नही होना चाहिए।
- द्वितीय एवं तृतीय सेमेस्टर में कितने भी विषयों में बैक हो।

पंचम सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर उत्तीर्ण होना चाहिए ।
- द्वितीय सेमेस्टर उत्तीर्ण होना चाहिए।
- तृतीय सेमेस्टर में 02 से अधिक विषयों में बैक न हो ।
- तृतीय एवं चतुर्थ सेमेस्टर में सम्मिलित रूप से 04 विषयों से अधिक में बैक न हो ।

षष्ठम् सेमेस्टर में प्रवेश की पात्रता:-

- प्रथम सेमेस्टर उत्तीर्ण होना चाहिए।
- द्वितीय सेमेस्टर उत्तीर्ण होना चाहिए।
- तृतीय सेमेस्टर में 02 से अधिक विषयों में बैक न हो।
- चतुर्थ एवं पंचम सेमेस्टर में कितने भी विषयों में बैक हो।
- यदि कोई छात्रा सभी सेमेस्टर में उत्तीर्ण है एवं केवल पंचम सेमेस्टर में 01 (एक) विषय में बैक है, ऐसी छात्रा को षष्ठम् सेमेस्टर की परीक्षा के साथ परीक्षा देने का अवसर दिया जावेगा।

- विशेष -
  - ✓ मूल्यांकित उत्तर-पुस्तिकाओं के अवलोकन व Challenged Valuation की प्रक्रिया इस स्नातक स्तर सेमेस्टर परीक्षा अप्रैल-मई से लागू है। छात्राएं परीक्षा परिणाम घोषित होने की तिथि से 3 दिन के भीतर इस हेतु आवेदन प्राचार्य को दे सकती हैं ।
  - ✓ विद्यार्थी को स्नातक एवं स्नातक आर्नस की उपाधि तभी प्राप्त होगी जबकि उसनें सभी 06 सेमेस्टर की परीक्षायें उत्तीर्ण कर ली हों एवं 06 सेमेस्टर की परीक्षायें उत्तीर्ण करने हेतु उसे प्रथम प्रवेश की तिथि से लेकर 06 वर्षो की अवधि प्राप्त होगी।
  - ✓ छात्रा जिस सत्र बैक की परीक्षा में सम्मिलित होगी उसी सत्र का पाठ्यक्रम एवं परीक्षा संबंधी नियम लागू होगा।

GOVT. BILASA GIRLS' P.G. (AUTO.) COLLEGE
BILASPUR (C.G)
FOUNDATION COURSE -
ENGLISH LANGUAGE
SYLLABUS 2021-2022
CLASS: B.A./B.SC/B.COM/B.SC.(H.Sc.)/BCA/BBA

Max. M - 80
Min. M – 29

SEMESTER- III

UNIT-ITEN QUESTIONS TO BE SET (one from each chapter) AND FIVE TO BE ATTEMPTED

LESSONS 5 X 4 = 20

1. Dandi Salt March – Louis Fischer
2. Aspects of Indian Constitution – M.C. Chagla
3. Individual Freedom – Jawaharlal Nehru
4. Fundamental Duties
5. Delhi in 1857 – MirzaGhalib
6. Raja's Diamond – R.L Stevenson
7. Tree – Tina Morris

UNIT-IICOMPREHENSION- Unseen Passage 10

UNIT-IIIPRECIS WRITING 10

UNIT-IVESSAY WRITING
Four to be set and one to be attempted 10

UNIT-V A. GRAMMAR (25 to be set and 20 to be attempted). 20

- Articles
- Prepositions
- Gerunds
- Self Forms &Possessives
- Narration (Direct & Indirect)
- Voice (Active & Passive)

B. VOCABULARY (from the text) 15 to be set 10 to be attempted. 10
Synonyms, Antonyms, Match the Column,combined the sentences

BOOK: ENGLISH LANGUAGE AND INDIAN CULTURE – MADHYA PRADESH HINDI GRANTH ACADEMY.

NEW CURRICULUM OF B.Sc.CHEMISTRY

SEMESTER III (2021-22)

MM-60 : HOURS -45; CREDIT -3

The new curriculum will comprise of one theory paper OF 60 marks in each semester and practical work of 50 mark per year. The curriculum is as per the UGC norms & conforming to the directives of the Govt. of Chhattisgarh.

INORGANIC CHEMISTRY

UNIT-I A. CHEMISTRY OF TRANSITION SERIES ELEMENTS

Transition Elements: Position in periodic table, electronic configuration, General Characteristics, viz., atomic and ionic radii, variable oxidation states, ability to form complexes, formation of coloured ions, magnetic moment μso (spin only) and μeff and catalytic behaviour. General comparative treatment of 4d and 5d elements with their 3d analogues with respect to ionic radii, oxidation states and magnetic properties.

B. Oxidation and Reduction: Redox potential, electrochemical series and its applications, Principles involved in extraction of the elements.

UNIT-II A. COORDINATION COMPOUNDS: Werner's theory and its experimental verification, IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelates, polynuclear complexes.

B.COORDINATION CHEMISTRY: Valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding. Crystal field theory, Crystal field splitting and stabilization energy, measurement of 10 Dq (Δo), CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq (Δo, Δt). Octahedral vs. tetrahedral coordination.

ORGANIC CHEMISTRY

UNIT-III A. CHEMISTRY OF ORGANIC HALIDES

Alkyl halides: Methods of preparation, nucleophilic substitution reactions – SN1, SN2 and SN i mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution, elimination reactions.

Aryl halides: Preparation, including preparation from diazonium salts, Nucleophilic Aromatic Substitution; SNAr, Benzyne mechanism. Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

11-9-21

B. ALCOHOLS& PHENOLS

(i) Trihydric alcohols - Nomenclature, methods of formation, chemical reactions of glycerol. (ii)Structure and bonding in phenols, physical properties and acidic character, Comparative acidic strength of alcohols and phenols, acylation and carboxylation.

(iii) Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesh reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction.

UNIT-IV ALDEHYDES AND KETONES

A. Nomenclature, structure and reactivity of carbonyl group. General methods of preparation of aldehydes and ketones. Mechanism of nucleophilic addition to carbonyl groups: Benzoin, Aldol, Perkin and Knoevenagel condensation. Condensation with ammonia and its derivatives, Wittig reaction, Mannich reaction, Beckmann and Benzil- Benzilic rearrangement.

~~B. Use of acetate as protecting group, Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones,~~ Cannizzaro reaction, MPV, Clemmensen reduction, Wolf-Kishner reaction, $LiAlH_4$ and $NaBH_4$ reduction. Halogenation of enolizable ketones, An introduction to α,β-unsaturated aldehydes and ketones.

PHYSICAL CHEMISTRY

UNIT-V A. THERMODYNAMICS-I Intensive and extensive variables; state and path functions; isolated, closed and open systems; Zeroth law of thermodynamics. First law: Concept of heat, work, internal energy and statement of first law; enthalpy, Relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases under isothermal and adiabatic conditions. Joule-Thompson expansion, inversion temperature of gases, expansion of ideal gases under isothermal and adiabatic condition

B. THERMO CHEMISTRY Thermochemistry, Laws of Thermochemistry, Heats of reactions, standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions, Adiabatic flame temperature, explosion temperature.

C. THERMODYNAMICS-II

Second Law of Thermodynamics: Spontaneous process, Second law, Statement of Carnot cycle and efficiency of heat engine, Carnot's theorem, thermodynamic state of temperature. Concept of entropy: Entropy change in a reversible and irreversible process, entropy change in isothermal reversible expansion of an ideal gas, entropy change in isothermal mixing of ideal gases, physical signification of entropy, Molecular and statistical interpretation of entropy.

D. THERMODYNAMICS-III Elementary idea of Third law of Thermodynamics, calculation of absolute entropy of molecule.

REFERENCE BOOKS

1. Physical Chemistry, G. M. Barrow, International student edition, Mc Graw Hill.
2. University General Chemistry, C. N. R. Rao, Macmillan.
3. Physical Chemistry, R. A. Alberty, Wiley Eastern.
4. The elements of physical chemistry, Wiley Eastern.
5. Physical Chemistry through problems, S. K. Dogra & S. Dogra, Wiley Eastern.
6. Physical Chemistry, B. D. Khosla
7. Physical Chemistry, Puri & Sharma.
8. Bhautik Rasayan, Puri, Sharma and Pathania, Vishal Publishing Company.
9. Bhautik Rasayan, P. L. Soni.
10. Bhautik Rasayan, Bahl and Tuli.
11. Physical Chemistry, R. L. Kapoor, Vol I-IV .
12. Chemical kinetics, K. J. Laidler, Pearson Educations, New Delhi (2004).

(5)

B. Sc. Third Semester: BOTANY

Choice Based Course -CBCB – 03(E1)

[Ethnobotany and Herbal Technology]

THEORY: Lectures – 45 Hours / 68-70 Periods (Credits: Theory-3, Practicals-2)

Maximum Marks: 75

Internal assessment marks: 15Term end examination marks: 60

Unit 1: Ethnobotany (concept and Studies) :(09 Hours / 14 Periods)

Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science.The relevance of ethnobotany in the present context; Major and minor ethnic groups (Tribals of India, and their life styles). Plants used by the tribal: a) Food plants b) Intoxicants and beverages c) Resins and oils and other uses.

Methodology of Ethno-botanical studies: a) Field work b) Herbarium c) Archaeological findings d) Ancient Literature e) temples andsacred places.

Unit 2: Ethnobotany (Role in modern Medicine and Legal aspect) (09 Hours / 14 Periods)

Medico-ethnobotanical sources in India;Significance and ethno botanical practices (with habitat and morphology) i. Azadiracthaindicaii.Ocimumsanctum iii. Vitexnegundo iv. Gloriosasuperbav. Tribulusterrestrisvi. Pongamiapinnatavii.Cassiaauriculataviii.Indigoferatinctoria. Role of ethnobotany in modern medicine with special example Rauvolfiasepentina, Trichopuszeylanicus, Artemisia,Withania. Role of ethnic groups in conservation of plant genetic resources.Ethnobotany as a tool to protect interests of ethnic groups.Sharing of wealth concept with few examples from India.Biopiracy, Intellectual Property Rights and Traditional Knowledge.

Unit 3: Ethnobotany and Folk medicines (09 Hours / 14 Periods)

Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: National interacts, Palaeo-ethnobotany. Folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India.Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, Blood pressure and skin diseases. Propagation of Medicinal Plants: Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of green house for nurseryproduction, propagation through cuttings, layering, grafting and budding.

Unit 4: Herbal medicines and Pharmacognosy (09 Hours / 14 Periods)

Herbal medicines: history and scope - definition of medical terms - role of medicinal plants in Siddha systems of medicine; cultivation -harvesting -processing -storage -marketing and utilization of medicinal plants.Pharmacognosy: systematic position medicinal uses of the following herbs in curing various ailments; Tulsi, Ginger, Fenugreek, Indian Goose berry and Ashoka. Medicinal plant banks, micro propagation of important species (Withaniasomnifera, neem and tulsi- Herbal foods-future of pharmacognosy).

Unit 5: Phytochemistry and Analytical pharmacognosy (09 Hours / 14 Periods)

Phytochemistry - active principles and methods of their testing - identification and utilization of the medicinal herbs; *Catharanthusroseus*(cardiotonic), *Withaniasomnifera* (drugs acting on nervous system), *Clerodendronphlomoides*(anti-rheumatic) and *Centellaasiatica*(memory booster).

Analytical pharmacognosy: Drug adulteration - types, methods of drug evaluation - Biological testing of herbal drugs - Phytochemical screening tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds)

Practical: Lab work (2 Credits=30 Hours /45 Periods)

Suggested Readings:

1) S.K. Jain, Manual of Ethnobotany, Scientific Publishers, Jodhpur, 1995.
2) S.K. Jain (ed.) 1989. Methods and approaches in ethnobotany. Society of ethnobotanists, Lucknow, India.
3) S.K. Jain, 1990. Contributions of Indian ethnobotny.Scientific publishers, Jodhpur.
4) Colton C.M. 1997. Ethnobotany – Principles and applications. John Wiley and sons –Chichester
5) Rama Rao, N and A.N. Henry (1996). The Ethnobotany of Eastern Ghats in A. P., India.Bot. Survey of India. Howrah.
6) Rajiv K. Sinha – Ethnobotany The Renaissance of Traditional Herbal Medicine – INA –SHREE Publishers, Jaipur-1996
8. Herbal plants and Drugs Agnes Arber, 1999. Mangal Deep Publications.
9. Ayurvedic drugs and their plant source. V.V. Sivarajan and BalachandranIndra 1994.Oxford IBH pub.Co.
10. Ayurveda and Aromatherapy. Miller, Light and Miller, Bryan, 1998.Banarsidass, Delhi.
11. Principles of Ayurveda, Anne Green, 2000. Thomsons, London.
12. Pharmacognosy, Dr.C.K.Kokate et al. 1999. NiraliPrakashan.

POS: -

B. Sc. Third Semester: BOTANY

Choice Based Course -CBCB – 03(E2)

[Agro-services and Organic farming]

THEORY: Lectures – 45 Hours / 68-70 Periods (Credits: Theory-3, Practicals-2)

Maximum Marks: 75

Internal assessment marks: 15 Term end examination marks: 60

Unit 1: General Concept of Agro-services and Agro-soil : (09 Hours / 14 Periods)

Scope and importance of Agro-services in India. Land and Water resources for agriculture. Soil, classification soil formation, soil composition, physical and biological properties of soil and use pattern- a brief account, major soil types of India. Rapid tests for analysis of soil and water samples. Concept of soil productivity and fertility. Sources of water for agriculture, water harvest techniques, utilization of water for irrigation.

Unit 2: Soil Managementand Irrigation (09 Hours / 14 Periods)

Concept of total and available nutrients. Soil testing and sampling; Visual diagnosis of deficiency symptoms in plants; Management practices for nutrient elements, nutrients toxicity especially minor nutrients elements. Methods of application of irrigation water and irrigation channels, surface and sub-surface irrigation method, Sprinkler and drip irrigation methods.

Unit 3: Irrigation Management: (09 Hours / 14 Periods)

Irrigation management- terminology, concept and importance towards Crop production. Water resources-surface and ground water resources. Factors affecting Water resources-climatic factors. Quality of irrigation water, management of poor quality irrigation water. Conductive use of poor and good quality water and influence of poor quality water on soil properties. Concept of irrigation scheduling Time of irrigation based on phonological stages and soil moisture status of the crop. Amount of water to be irrigated Irrigation schedules for different important crops.

Unit 4: Fertilizers and Organic Manures: (09 Hours / 14 Periods)

Macro and Micro-elements essential for plant growth. Fertilizers - importance and types (simple, complex and mixed fertilizers). Available forms of nitrogen, phosphorous and potassium in soil, types of N.P. and K. fertilizers used for increasing production of crops and fruit in the orchards. Fertilizer application techniques in the field. Importance of soil organic matter on soil humans. Organic manures and their method of application. Preparation of organic manners- compositing rapid composition, phosphor compost, vermi compost. Green-manuring and biofertilisers - a general account.

Unit 5: Organic Farming: (09 Hours / 14 Periods)

Scope, definition and Concept of organic farming. Objectives of organic farming. Importance of organic farming. Component of organic farming and their role in sustainable crop production. Principles of organic farming. Organic farming in relation to soil health and quality production. Nutrient management in organic farming. Disease and pest management in organic farming. Certification and accreditation process of organic product.

Practical: Lab work (2 Credits=30 Hours /45 Periods)

Suggested Readings:

1. ICAR Handbook of Manures and Fertilizers
2. Tarnhune,R.V.Motiamani,D.P. Soils:Their Chemistry and Fertility in Bali,Y.P. and Donahue,R.L. Tropical Asia.
3. Miller, R.W. and Donahue,R.L. Soils-An introduction to soils and Plant Growth
4. Das, P.K. Introduction to Soil Science
5. Brady, N.C. The nature and properties of soil
6. Mukherjee,S.K. and Biswas,T.D. An introduction to soil science
7. Mostara,M.R. Bhattacharya,P. Biofertilizers Technology, Marketing And Srivastava, D. and usage
8. ICAR Handbook of Manures and Fertilizers
9. SubhaRao, N.S. Biofertilisers in Agriculture and Forestry
10. Tandon, H.L.S.(ed.) Fertilizers Organic Manures, Recyclable Wastes and biofertilizers
1. Tilak, K.V.B.R. Bacteria Fertilizers

of BOS: -

B. Sc. Third Semester: BOTANY

Choice Based Course -CBCB – 03(E3)

[Basic Computers and its Application]

THEORY: Lectures – 45 Hours / 68-70 Periods (Credits: Theory-3, Practicals-2)

Maximum Marks: 75

nternal assessment marks: 15 Term end examination marks: 60

Unit 1: **(09 Hours / 14 Periods)**

Characteristics of computers, basic applications. Components of computer system; central processing unit, VDU, keyboard and mouse, input and output devices, computer memory, concepts of hardware and software. Concept of file, folder and directories, commonly used command.

Unit 2: **(09 Hours / 14 Periods)**

Number System: Binary, Octal, and Hexadecimal; Fixed and Floating Point Number Representations, Complements, Binary Arithmetic: Addition, Subtraction, Multiplication and Division, Binary Codes.

Unit 3: **(09 Hours / 14 Periods)**

Computer fundamentals: Basic concept of computer organization, generations of computer, basic data and information, basic data types, flow chart and basic of operating system (windows, unix), Classification of computers; mainframe computers and super computers, computer language. Introduction in MS office software concerning word processing, spreadsheets and presentation software.

Unit 4: **(09 Hours / 14 Periods)**

Internet & Web: internet - introduction, importance, requirements for internet, LAN, WAN, www.Electronic mailing, chatting, search engine, web pages. Application of Computers in the field of Biology

Unit 5: **(09 Hours / 14 Periods)**

Applications of computers; Protein structure prediction, drug designing, evaluation by ramachandran plot, domain and motifs. Cluster analysis; phylogenetic clustering by simple matching coefficient, sequence comparison

Practical: Lab work (2 Credits=30 Hours /45 Periods)

Suggested Readings:

- V Rajaraman, Fundamentals of Computers, Fourth Edition, PHI.
- Anita Goel, Fundamentals of Computers; Forthcoming title in Pearson-Education

❖ Note: Use of Open Office/Star Office is recommended, as they are freely downloadable.
❖ Reference manual for Open Office available at: http://www.openffice.org
❖ Reference manual for Star Office available at: http://www.sun.com/software/staroffice/

Signature of BOS: -

09.10.2021

Core Course -CCB – 04

[*Ecology and Systematic Botany*]

(Credits: Theory-3, Practicals-2)

THEORY: Lectures – 45 Hours / 68-70 Periods

Unit 1: Ecological factors and Ecosystem(09 Hours/ 14 Periods)

Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes. Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling; Cycling of carbon, nitrogen and Phosphorous.

Unit 2: Plant communities, Phytogeography and Pollution (09 Hours/ 14 Periods)

Community concept; community Characters – Qualitative and quantitative; Ecotone and edge effect; Succession; Processes and types.Principle of Phytogeography;Endemism; Hotspot; Phyto - geographical zones in India; Pollution –Air, Water and Soil –cause and remedies. Global warming.

Unit 3:Introduction to plant taxonomy (09 Hours/ 14 Periods)

Identification, Classification, Nomenclature. Functions of Herbarium, important herbaria and botanical gardens of the world and India. Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations. Types of classification-artificial, natural and phylogenetic.Bentham and Hooker (upto series), Engler and Prantl (upto series) and its merits and demerits.

Unit 4: Taxonomic description and Identification (09 Hours/ 14 Periods)

Dicotyledonous order and family – Characteristics and economic importance offollowing - Parietales(Brassicaceae), Malvales (Malvaceae), Geraniales(Rutaceae), Rosales (Fabaceae), Umbillales(Apiaceae),Gentianales(Apocyanaceae) Unisexuales (Euphorbiaceae), Lamiales (Lamiaceae), Astrales (Astraceae).

Unit 5: Taxonomic description and Modern taxonomy (Systematics) (09 Hours/ 14 Periods)

Monocotyledonous order and family- Characteristics and economic importance offollowing - Microspermae (Orchidaceae), Coronarieae (Lilliaceae),Glumales (Cyperaceae and Poaceae).

Modern trends of taxonomy - Relation with other branches –Embryology, AnatomyBiochemistry and Cytology.

Practical: Lab work (2 Credits=30 Hours /45 Periods)

Suggested Readings

1. Kormondy, E.J. (1996). Concepts of Ecology.Prentice Hall, U.S.A. 4th edition.
2. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India.8th edition.
3. Simpson, M.G. (2006). *Plant Systematics.*Elsevier Academic Press, San Diego, CA, U.S.A.
4. Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.

(9)

Govt. Bilasa Girls P.G. College Bilaspur (C.G.)

Session 2021-2022
B.Sc. Semester III
SUBJECT ZOOLOGY
Paper (Pass Course)

Max. Marks: 60
Min. Pass Marks:21

ANATOMY – PHYSIOLOGYAND EVOLUTION LECTURES:45

UNIT-I Comparative Anatomy of various organs systems of Vertebrates.

1. Endoskeleton – Limbs, girdles and vertebrae.
2. Integument and its derivatives: structure of Scales, hair and feathers.
3. Alimentary canal and digestive glands in vertebrates.
4. Respiratory organs: Gills lung, Air sacs in birds.

UNIT-II 1. Circulatory system- Evolution of heart and ducts.

2. Urinogenital system –Kidney and excretory ducts.
3. Gonads and genital ducts.
4. Nervous System –General plan of brain and spinal cord.

UNIT- III 1. Digestion and absorption of dietary components.

2. Physiology of heart, Cardiac cycle and ECG.
3. Blood coagulation.
4. Respiration-Mechanism and control of breathing.

UNIT- IV 1. Excretion- Physiology of excretion, Osmoregulation,

2. Physiology of Muscle contraction.
3. Physiology of nerve impulse, Synaptic transmission.
4. Ear and Eye-structure and function.

UNIT-V Evolution

1. Evidences of organic evolution.
2. Theories of organic evolution.
3. Variation, Mutation, Isolation and Natural selection.
4. Evolution of Horse.

SUGGESTED READINGS

1. Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution.* IV Edition. McGraw-Hill Higher Education.
2. Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates.* IX Edition. The McGraw-Hill Companies.
3. Weichert C.K and William Presch (1970). *Elements of Chordate Anatomy*, Tata McGraw Hills
4. Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.
5. Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House
6. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt AsiaPTE Ltd. /W.B. Saunders Company.
7. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons,
8. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition.Lippincott W. & Wilkins.

16.9.21

9. Arey, L.B. (1974). Human Histology. IV Edition. W.B. Saunders.
10. DeFiore Atlas of Human histology Physiology Vander
11. Ridley, M. (2004). *Evolution*. III Edition. Blackwell Publishing
12. Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H.
13. (2007). *Evolution*. Cold Spring, Harbour Laboratory Press.
14. Hall, B. K. and Hallgrimsson, B. (2008). *Evolution*. IV Edition. Jones and Bartlett Publishers
15. Pevsner, J. (2009). *Bioinformatics and Functional Genomics*. II Edition. Wiley-Blackwell.
16. Campbell, N. A. and Reece J. B. (2011). *Biology*. IX Edition, Pearson, Benjamin, Cummings.
17. Douglas, J. Futuyma (1997). *Evolutionary Biology*. Sinauer Associates.
18. Minkoff, E. (1983). *Evolutionary Biology*. Addison-Wesley.

PRACTICAL (COMPARATIVE ANATOMY)

1. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs.
2. Disarticulated skeleton of Frog, *Varanus*, Fowl, Rabbit
3. Carapace and plastron of turtle /tortoise
4. Mammalian skulls: One herbivorous and one carnivorous animal.
5. Study of permanent histological slides as per theory.

PRACTICAL (PHYSIOLOGY)

1. Recording of blood pressure using a sphygmomanometer
2. Examination of sections of mammalian oesophagus, stomach, duodenum, ileum, rectum liver, trachea, lung, kidney
3. Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex)
4. Preparation/Examination of mounts: Squamous epithelium, Striated muscle fibres and nerve cells
5. Examination of sections of Mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid

PRACTICAL (EVOLUTION)

1. Study of fossil evidences from plaster cast models and pictures
2. Study of homology and analogy from suitable specimens/ pictures
3. Demonstration of changing allele frequencies with and without selection
4. Construction of cladogram based on morphological characteristics
5. Construction of phylogenetic tree with bioinformatics tools (Clustal X and Phylip)
6. Interpretation of phylogenetic trees

RS 16/9/21 — SR 16.9.21

B.Sc. (PART- II) CLINICAL NUTRITION & DIETETICS

SEMESTER-III

PAPER - I

BIOCHEMISTRY & MICROBIOLOGY

MARKS-60

Unit - I

Enzymes - Structure, Classification, Factor Affecting the action

Carbohydrates - Structure, Classification, Functions, Properties

Carbohydrates metabolism - Glycolysis. TCA Cycle, Gluconeogensis, Glycogenolysis, Glycogensis

Unit-II

Protein - Structure, Classification, Functions, biologicalValue, Essential and Non-Essential Amino Acids, Properties.

Metabolism - Urea Cycle.

Nucleo- proteins-Basic Structure and functions.

Unit-III

Fats- Structure, Classification, Properties, Essential Fatty Acids, Functions.

Metabolism-B Oxidation of Fat.

Hormones - Insulin, Thyroxin, Sex Hormones, Adrenal Hormones, Pituitary Hormones- their hypo and Hyper Activity.

Water Homeostasis.

Unit-IV

Structure and classification of some common microbes- (Bacteria, Fungi, Virus, Yeast, Moulds.

Microbiology of different Foods, Spoilage and contaminations, Effects on the Following

Cereal and Cereal products.

Sugar and Sugar Products.

Vegetables and Fruits

Meat and Meat products

Fish and Other Foods

Egg and Poultry

Milk and Milk Products

Canned Food

Unit - V

Beneficial Effects of Microorganisms.

Factors affecting microbial growth.

Food Toxicity due to Microorganism and any five micro-originate diseases.

Environmental Microbiology - Water, Air, Sewage, Soil

Tolmkle

HONOURS COURSE

B.Sc. Clinical Nutrition / B.Sc (H.Sc.)/ B.Sc. Food and Quality Control
III Semester
ORGAN SPECIFIC DIETICS
HEPATO NUTRITION
MARKS-60

- Anatomical & Histological Structure of liver
- Blood Circulation in liver
- Functions of liver-
- Metabolic- role in carbose metabolism, role in portion metabolism. Role in lipid metabolism, role of alcohol metabolism, role in vitamin and mineral metabolism,
- Detoxification- Importance of the process and some examples.
- Digestion related- digestion of portion, fat and caboose
- Bile production by liver- importance of bile.
- Metabolic cycle run in liver
- Nutritional requirement of liver
- Effect of deficiencies of these nutrients of river
- Various diseases of lives-
  Hepatitis with Jaundice--
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
- Cirrhosis-
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
- Hepatic Come-
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
- Fatty Liver-
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
- Alcoholic Damage of liver
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy

Suman
Twinkle

सामान्य हिन्दी
चतुर्थ सत्र (सेमेस्टर)
सत्र : 2021-22
अनिवार्य प्रश्न पत्र
बी.ए. / बी.एस-सी. / बी.कॉम. / बी.एच.एस-सी.

अंक योजना पूर्णांक : 100
मुख्य परीक्षा : 80
आंतरिक मूल्यांकन : 20

इकाई – 1
1. पल्लवन, पारिभाषिक शब्दावली ।
2. भारत वंदना (कविता)

इकाई – 2
1. पत्र लेखन (निजी पत्र, व्यावहारिक पत्र, शासकीय पत्र, अर्द्ध शासकीय पत्र, आवेदन पत्र।)
2. शिकागो से स्वामी विवेकानंद का पत्र ।

इकाई – 3
पर्यायवाची, युग्म शब्द, शब्द शुद्धि, उपसर्ग, प्रत्यय, तत्सम, तद्भव शब्द, मुहावरे–लोकोक्ति।

इकाई – 4
देवनागरी लिपि, नामकरण, वैज्ञानिकता एवं विशेषताएं, कम्प्यूटर में हिन्दी का अनुप्रयोग, मानक हिन्दी स्वरूप, विशेषताएं और प्रकार ।

इकाई – 5
1. हिन्दी अपठित, संक्षेपण।
2. ईदगाह (कहानी) प्रेमचंद ।

:: सहायक पुस्तकें ::

1. भारतीयता के अमर स्वर – डॉ. धनंजय वर्मा
2. प्रयोजनमूलक हिन्दी – विनोद गोदरे
3. कम्प्यूटर भाषिक अनुप्रयोग – विजय कुमार मल्होत्रा
4. हिन्दी संक्षिप्तलेखन – रामप्रसाद किचलू
5. हिन्दी शब्द सामर्थ्य – शिवनारायण चतुर्वेदी
6. हिन्दी व्याकरण एवं रचना – डॉ. प्रभा व्यौहार
   म.प्र. हिन्दी ग्रंथ अकादमी

सामान्य हिन्दी
चतुर्थ सत्र (सेमेस्टर)
सत्र : 2021-22
अनिवार्य प्रश्न पत्र
बी.ए. / बी.एस-सी. / बी.कॉम. / बी.एच.एस-सी.

अंक योजना पूर्णांक : 100
मुख्य परीक्षा : 80
आंतरिक मूल्यांकन : 20

इकाई – 1	1. पल्लवन, पारिभाषिक शब्दावली । 2. भारत वंदना (कविता)
इकाई – 2	1. पत्र लेखन (निजी पत्र, व्यावहारिक पत्र, शासकीय पत्र, अर्द्ध शासकीय पत्र, आवेदन पत्र।) 2. शिकागो से स्वामी विवेकानंद का पत्र ।
इकाई – 3	पर्यायवाची, युग्म शब्द, शब्द शुद्धि, उपसर्ग, प्रत्यय, तत्सम, तद्भव शब्द, मुहावरे–लोकोक्ति।
इकाई – 4	देवनागरी लिपि, नामकरण, वैज्ञानिकता एवं विशेषताएं, कम्प्यूटर में हिन्दी का अनुप्रयोग, मानक हिन्दी स्वरूप, विशेषताएं और प्रकार ।
इकाई – 5	1. हिन्दी अपठित, संक्षेपण। 2. ईदगाह (कहानी) प्रेमचंद ।

:: सहायक पुस्तकें ::

1.	भारतीयता के अमर स्वर	– डॉ. धनंजय वर्मा
2.	प्रयोजनमूलक हिन्दी	– विनोद गोदरे
3.	कम्प्यूटर भाषिक अनुप्रयोग	– विजय कुमार मल्होत्रा
4.	हिन्दी संक्षिप्तलेखन	– रामप्रसाद किचलू
5.	हिन्दी शब्द सामर्थ्य	– शिवनारायण चतुर्वेदी
6.	हिन्दी व्याकरण एवं रचना	– डॉ. प्रभा व्यौहार
		म.प्र. हिन्दी ग्रंथ अकादमी

Ashuksy
2020-21

2020

NEW CURRICULUM OF B.Sc. CHEMISTRY

SEMESTER IV(2021-22) MM-60 : HOURS -45; CREDIT -3

The new curriculum will comprise of one theory paper of 60 marks in each semester and practical work of 50 mark per year. The curriculum is as per the UGC norms & conforming to the directives of the Govt. of Chhattisgarh.

INORGANIC CHEMISTRY

UNIT-I A. CHEMISTRY OF LANTHANIDE ELEMENTS Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.

B. CHEMISTRY OF ACTINIDES General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the later actinides and the later lanthanides

UNIT-II A. ACIDS BASES : Arrhenius, Bronsted-Lowry, conjugate acids and bases, relative strengths of acids and bases, the Lux-flood, solvent system and Lewis concepts of acids and bases.

B. NON-AQUEOUS SOLVENTS : Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid ammonia and liquid sulphur dioxide, HF, H_2SO_4 , Ionic liquids

UNIT-III A. CARBOXYLIC ACIDS&DERIVATIVES

Preparation, Structure and bonding, Physical and chemical properties including, acidity of carboxylic acids, effects of substituents on acid strength, Hell-Volhard Zeïlinsky reaction. Reduction of carboxylic groups, Mechanism of decarboxylation. Di carboxylic acids: Methods of formation and effect of heat and dehydrating agents, Hydroxyacids.

Structure of acid chlorides, esters, amides and acid anhydrides, Relative stability of acyl derivatives. Physical properties, inter-conversion of acid derivatives by nucleophilic acyl substitution. Mechanism of acid and base catalyzed esterification and hydrolysis.

B. ORGANIC COMPOUNDS OF NITROGEN:

(i)Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanism of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline medium.

(ii) Reactivity, structure and nomenclature of amines, physical properties. Stereochemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl and aryl amines (reduction of nitro compounds and nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel-Phthalimide reaction, Hofmann Bromamide reaction, Reactions of amines, electrophilic aromatic substitution of aryl amines, Reaction of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, Azo coupling.

11.9.21

UNIT IV A CHEMICAL EQUILIBRIUM Criteria of thermodynamic equilibrium, Concept of Fugacity, Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Coupling of exergonic and endergonic reactions. Equilibrium constants and their quantitative dependence on temperature, pressure and concentration.

B.PHASE EQUILIBRIUM . Phase rule, Phase, component and degree of freedom, derivation of Gibbs phase rule, limitation of phase rule, applications of phase rule to one component system: Water system and sulphur system. Application of phase rule to two component system: Pb-Ag system, desilverization of lead, Zn-Mg system Ferric chloride-water system, congruent and incongruent, melting point and eutectic point. Three component system: Solid solution liquid pairs. Nernst distribution law, Henry's law, application, solvent extraction

UNIT V- A. IONIC EQUILIBRIA

Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono protic acids (exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

B. PHOTOCHEMISTRY

Characteristics of electromagnetic radiation, Interaction of radiation with matter, difference between thermal and photochemical processes, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry: Grothus-Drapper law, StarkEinstein law, quantum yield, actinometry, examples of low and high quantum yields, Photochemical equilibrium and the differential rate of photochemical reactions, Quenching, Role of photochemical reaction in biochemical process. Jablonski diagram depicting various process occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), photosensitized reactions, energy transfer processes {simple examples),Chemiluminescence.

REFERENCE BOOKS

1. Physical Chemistry, G. M. Barrow, International student edition, McGraw Hill.

2. University General Chemistry, C. N. R. Rao, Macmillan.

3. Physical Chemistry, R. A. Alberty, Wiley Eastern.

4. The elements of physical chemistry, Wiley Eastern.

5. Physical Chemistry through problems, S. K. Dogra & S. Dogra, Wiley Eastern.

6. Physical Chemistry, B. D. Khosla,.

7. Physical Chemistry, Puri & Sharma.

8. Bhautik Rasayan, Puri, Sharma and Pathania, Vishal Publishing Company.

11.9.21

9. Bhautik Rasayan, P. L. Soni.

10. Bhautik Rasayan, Bahl and Tuli.

11. Physical Chemistry, R. L. Kapoor, Vol I-IV .

12. Chemical kinetics, K. J. Laidler, Pearson Educations, New Delhi (2004).

Paper –IV LABORATORY COURSE

INORGANIC CHEMISTRY

Qualitative semimicro analysis of mixtures containing 5 radicals. Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested: CO_3^{2-}, NO_2^-, S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, CH_3COO^-, F^-, Cl^-, Br^-, I^-, NO_3^-, BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-}, NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}. Mixtures should preferably contain one interfering anion, or insoluble component ($BaSO_4$, $SrSO_4$, $PbSO_4$, CaF_2 or Al_2O_3) or combination of anions e.g. CO_3^{2-} and SO_3^{2-}, NO_2^- and NO_3^-, Cl^-, Br^-, I^-. **Volumetric analysis** (a) Determination of acetic acid in commercial vinegar using NaOH. (b) Determination of alkali content-antacid tablet using HCl. (c) Estimation of calcium content in chalk as calcium oxalate by permanganometry. (d) Estimation of hardness of water by EDTA. (e) Estimation of ferrous & ferric by dichromate method. (f) Estimation of copper using thiosulphate. • Principles involved in chromatographic separations. Paper chromatographic separation of following metal ions: i. Ni (II) and Co (II) ii. Fe (III) and Al (III)

ORGANIC CHEMISTRY• Detection of elements (X, N, S). • Qualitative analysis of unknown organic compounds containing simple functional groups (alcohols, carboxylic acids, phenols, nitro, amine, amide, and carbonyl compounds, carbohydrates) • Preparation of Organic Compounds: (i) m-dinitrobenzene, (ii) Acetanilide, (iii) Bromo/Nitro-acetanilide, (iv) Oxidation of primary alcohols-Benzoic acid from benzylacohol, (v) azo dye.

PHYSICAL CHEMISTRY Transition Temperature • Determination of the transition temperature of the given substance by thermometric/ dialometric method (e.g. $MnCl_2.4H_2O$/$SrBr_2.2H_2O$). Thermochemistry • Determination of heat capacity of a calorimeter for different volumes using change of enthalpy data of a known system (method of back calculation of heat capacity of calorimeter from known enthalpy of solution or enthalpy of neutralization). • Determination of heat capacity of the calorimeter and enthalpy of neutralization of hydrochloric acid with sodium hydroxide. • To determine the solubility of benzoic acid at different temperature and to determine ΔH of the dissolution process. • To determine the enthalpy of neutralization of a weak acid/ weak base versus strong base/ strong acid and determine the enthalpy of ionization of the weak acid/ weak base. • To determine the enthalpy of solution of solid calcium chloride and calculate the lattice energy of calcium chloride from its enthalpy data using Born Haber cycle. Phase Equilibrium • To study the effect of a solute (e.g. NaCl, Succinic acid) on the critical solution temperature of two partially miscible liquids (e.g. phenol-water system) and to determine the concentration of that solute in the given phenol-water system. • To construct the phase diagram of two component system (e.g. diphenylamine– benzophenone) by cooling curve method. •

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Distribution of acetic/ benzoic acid between water and cyclohexane. • Study the equilibrium of at least one of the following reactions by the distribution method: (i) I2(aq) + I- → I3 (aq)2+ (ii) Cu2+(aq) + nNH3 → Cu(NH3)n Molecular Weight Determination Determination of molecular weight by Rast Camphor and Landsburger method. Note: Experiments may be added/ deleted subject to availability of time and facilities.

Reference Books 1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009) 2. Furniss, B.S., Hannaford, A.J., Smith, P.W.G. & Tatchell, A.R. Practical Organic Chemistry, 5th Ed. Pearson (2012)

3. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000). 22

4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).

5. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011). Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).

6. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York Hrs.5

PRACTICAL EXAMINATION M.M.50 Three Experiments are to be performed.

1. Inorganic – Qualitative semimicro analysis of mixtures. 12 marks OR One experiment from synthesis and analysis by preparing the standard solution.

2. (a) Identification of the given organic compound & determine its M.Pt./B.Pt. 6 marks (b) Determination of Rf value and identification of organic compounds by paper chromatography. 6 marks
3. Any one physical experiment that can be completed in two hours including calculations. 12 marks

4. Viva 10 marks

5. Sessional 04 marks In case of Ex-Students one marks will be added to each of the experiment. Page -4

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Laboratory work

(B.Sc. – III & IV Semester)

(CORE COURSE – CCB- 03 & 04)

TIME: 3 Hrs. Marks – 25+25 = 50

Course – CCB 03 ----25 marks		CCB 04 = Choice courses(CBCB 04 E1)---25 marks	
1. Ecological experiment	04	1.Description of ethno medical plant	04
2. Physico-chemical analysis	04	2.Description of herbal medicinal plant	04
3. Plant Description	04	3.Phytochamical screening test	04
4. Field Report (Local flora : Rainy / winter/summer season)	04	4.Field report of ethno medicinal / herbal medicinal plant	04
5. Spotting	04	5. Spotting	04
6. Viva- voce	05	6. Sessional	05

Suggested Laboratory Exercises (CCB- 03)

Determination of pH, carbonates, chlorides, nitrates and sulphates of the grassland and woodland soils.
To determine moisture content and water holding capacity of grassland and woodland soils.
To study the vegetation structure through profile diagram.
To estimate transparency, ph and temperature of different water bodies.
To measure dissolved oxygen contained in polluted and unpolluted water sample.
To estimate slightly or different water samples.
To determine minimum number of Quadrat size for the study of herbaceous vegetation in the college campus by species area curve method.
To study the Frequency of herbaceous species in grassland and to compare the frequency distribution with Raunkair's Standards Frequency diagram.
To study the Frequency of herbaceous species in grassland and to compare the frequency distribution with Raunkair's Abundance Standards Frequency diagram.
To study the Frequency of herbaceous species in grassland and to compare the frequency distribution with Raunkair's density Standards Frequency diagram.
To measure the above ground biomass in a grassland.
To study the vegetative and floral characters of families mention in syllabus.
Mounting of a properly dried and pressed specimen of local flora of cultivated and wild plants species included in syllabus.

Suggested Laboratory Exercises (CBCB- 04 E1)

- To study the vegetative and floral characters of ethanomedicinal plant species especially modern medicine mentioned in syllabus.
- To study the vegetative and floral characters of folk medicinal plant species especially modern medicine mentioned in syllabus.
- To study the vegetative and floral characters of herbal medicinal plant species especially modern medicine mentioned in syllabus.
- Biological testing of herbal drugs.
- Phytochemical screening test for secondary metabolite/alkaloids, phenolic compound, flavonoids, steroids, triterpenoids.
- Vegetative propagation of Ethno medicinal plants.

Signature of Convener & Members, Board of Studies:

09.10.2021

Govt. Bilasa Girls P.G. College Bilaspur (C.G.)

B. Sc. ZOOLOGY – SEMESTER: IV

Paper: Choice Based Course - A

Session 2021-22

ECONOMIC ZOOLOGY (CREDITS: THEORY-3) LECTURES: 45

Max. Marks: 60
Min. Pass Marks:21

Unit 1: Bee-keeping and Bee Economy (Apiculture)

Varieties of honey bees and Bee pasturage; Setting up an apiary: Langstroth's/Newton's hive, bee veil, brood and storage chambers, iron frames and comb sheets, drone excluder, rearing equipments, handling of bees, artificial diet; Diseases of honey bee, American and European Foulbrood, and their management; Honey extraction techniques; Physico-chemical analysis of honey; Other beneficial products from bee; Visit to an Apiculture Institute and honey processing Units

Unit 2: Silk and Silk Production (Sericulture)

Different types of silk and silkworms in India; Rearing of *Bombyxmori* – Rearing racks and trays, disinfectants, rearing appliances, black boxing, Chawki rearing, bed cleaning, mountages, harvesting of cocoons; Silkworm diseases: Pebrine, Flacherie, Grasserie, Muscardine and Aspergillosis, and their management; Silkworm pests and parasites: Uzi fly, Dermestid beetles, and their management; Silk reeling techniques; Quality assessment of silk fibre.

Unit 3: Aquaculture

Brood stock management; Induced breeding of fish and prawn; Management of hatchery of fish; Management of nursery, rearing and stocking ponds; Preparation and maintenance of fish aquarium; Preparation of compound diets for fish; Role of water quality in aquaculture; Fish diseases: Bacterial, viral and parasitic; Preservation and processing of harvested fish; Fishery by-products.

Unit 4: Poultry Farming

Introduction; Indigenous and exotic breeds; Rearing, housing, feed and rationing; Commercial importance of poultry farming; Varietal improvement techniques; Diseases and their management; poultry farm management and business plan; Visit to any Poultry Poultry farm.

Unit 5: Dairy Farming

Introduction; Indigenous and exotic breeds; Rearing, housing, feed and rationing; Commercial importance of dairy farming; Varietal improvement techniques; Diseases and their management; Dairy farm management and business plan; Visit to any Dairy farm.

SUGGESTED READINGS

1. Prost, P. J. (1962). *Apiculture*. Oxford and IBH, New Delhi.
2. Sericulture, *FAO Manual of Sericulture.*
3. Hafez, E. S. E. (1962). *Reproduction in Farm Animals*, Lea and Fabiger Publishers.
4. Srivastava, C. B. L. (1999). *Fishery Science and Indian Fisheries*. Kitab Mahal publications, India.
5. Sardar Singh, *Beekeeping in India*, Indian council of Agricultural Research, New Delhi.
6. Dhyan Singh Bisht, *Apiculture*, ICAR Publication.
7. Knobil, E. and Neill, J. D. (2006). *The Physiology of Reproduction*, Vol. 2, Elsevier Publishers.

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Govt. Bilasa Girls P.G. College Bilaspur (C.G.)

B. Sc. ZOOLOGY – SEMESTER: IV
Paper: Choice Based Course - B
Session 2021-22
WILD LIFE CONSERVATION AND MANAGEMENT
LECTURES: 45

Max. Marks: 60
Min. Pass Marks:21

Unit 1:
Wild life - Values of wild life - positive and negative; Our conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies. Habitat analysis, Evaluation and management of wild life - Physical parameters: Topography, Geology, Soil and water; Biological Parameters: food, cover, forage, browse and cover estimation; Standard evaluation procedures: remote sensing and GIS.

Unit 2:
Management of habitats - Setting back succession; Grazing logging; Mechanical treatment; Advancing the successional process; Cover construction; Preservation of general genetic diversity.

Unit3:
Population estimation: Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation, Hair identification, Pug marks and census method.

Unit 4:
National Organizations involved in wild life conservation; Elementary idea ofWild life Legislation - Wild Protection act - 1972, its amendments and implementation.
Management of excess population & translocation; Bio-telemetry; Care of injured anddiseased animal; Quarantine; Common diseases of wild animal

Unit 5
Protected areas National parks & sanctuaries, Community reserve; Important features of protected areas in India; Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.Management planning of wild life in protected areas; Estimation of carrying capacity; Eco tourism / wild life tourism in forests; Concept of climax persistence;

PRACTICALS
1. Identification of flora, mammalian fauna, avian fauna, herpeto-fauna
2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses)
3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers etc.
4. Demonstration of different field techniques for flora and fauna
5. PCQ, Ten tree method, Circular, Square & rectangular plots, Parker's 2 Step and other methods for ground cover assessment, Tree canopy cover assessment, Shrub cover assessment.
6. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).

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Govt. Bilasa Girls P.G. College Bilaspur (C.G.)

B. Sc. ZOOLOGY – SEMESTER: IV
Paper: Choice Based Course - B
Session 2021-22
WILD LIFE CONSERVATION AND MANAGEMENT
LECTURES: 45

Max. Marks: 60
Min. Pass Marks:21

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6. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).

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Govt. Bilasa Girls P.G. College Bilaspur (C.G.)

B. Sc. ZOOLOGY – SEMESTER: IV

Paper: Choice Based Course - C

Session 2021-22

IMMUNOLOGY

(CREDITS: THEORY-3)

THEORY **LECTURES: 45**

Unit 1: Overview of Immune System

Historical perspective of Immunology, Early theories of Immunology, Haematopoiesis, Cells and organs of the Immune system

Unit 2: Innate and Adaptive Immunity

Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, Adaptive immunity (Cell mediated and humoral), Passive: Artificial and natural Immunity, Active: Artificial and natural Immunity, Immune dysfunctions.

Unit 3: Antigens

Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes

Immunoglobulins

Structure and functions of different classes of immunoglobulins, Antigen-antibody interactions, Immunoassays, Polyclonal sera, Monoclonal antibodies, Hybridoma technology

Unit 4 Major Histocompatibility Complex

Structure and functions of endogenous and exogenous pathway of antigen presentation Cytokines-Properties and functions, Cytokine-based therapies

Unit 5: Hypersensitivity

Gell and Coombs' classification and Brief description of various types of hypersensitivities Vaccines -Types of vaccines: Recombinant vaccines and DNA vaccines

PRACTICAL

1. Demonstration of lymphoid organs
2. Ouchterlony's double immuno-diffusion method
3. ABO blood group determination
4. Preparation of single cell suspension of splenocytes from chick spleen, cell counting and viability test
5. ELISA/ dot Elisa (using kit)
6. Principles, experimental set up and applications of immuno-electrophoresis, RIA, F

SUGGESTED READINGS

1. Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006). *Immunology*, VI Edition. W.H. Freeman and Company.
2. David, M., Jonathan, B., David, R. B. and Ivan R. (2006). *Immunology,* VII Edition, Mosby, Elsevier Publication.
3. Abbas, K. Abul and Lechtman H. Andrew (2003.) *Cellular and Molecular Immunology.* V Edition. Saunders Publication.

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Govt. Bilasa Girls P.G. College Bilaspur (C.G.)

Practical

B.Sc. Semester III +IV

Session: 2021-22 (M.M. 50)

PRACTICAL WORK

SCHEME OF PRACTICAL EXAMINATION

1.	Spots-8(Slides-4, Bones-4)	16
2.	Exercise based on Physiology	04
3.	Exercise based on Evolution	05
4.	Two Exercises based on Applied Zoology/ Wild life/Immunology	10
5.	Viva	05
6.	Sessional marks	10
	Total	50

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(25)

B.Sc. CLINICAL NUTRITION & DIETETICS
SEMESTER-IV
BASIC DIETETICS & COMMUNITY NUTRITION

M.M. - 60

Unit - I

1. Food Guide and Food Standard.
2. Basic Principles of Meal Planning - Objectives, steps, Balanced Diet.
3. Nutrition During Pregnancy and Lactation - Physiological stages of pregnancy, nutritional requirements.
4. Nutrition during Infancy- Breast Feeding and its Implications- Hazards of Bottle Feeding, Weaning, Foods - Planning, Formulating and preparing. Importance of correct and timely, weaning, Supplementary Foods.

Unit-II

5. Early and Late Childhood, Growth and Development, Nutritional Requirement, Nutritional Deficiencies prevalent in this age group.
6. Nutrition during Adolescence and Geriatric Nutrition - Nutritional Needs, Factors affecting good nutritional Status.
7. Nutrition in Special Conditions- Air Travelling, Space Travelling, For Sports persons.

Unit III

8. a) Nutrition and health in national development.
   b) Nutritional Problems confronting our country - the causes of Malnutrition in India, Balance between food and population growth.
9. Methods of Assessment of Nutritional status - Sampling Techniques, Identification of rich groups. Direct Assessments- Diet Survey, Anthropometry, Clinical and Biochemical Estimations.
   Indirect Assessments- Food Balance Sheets and Agricultural Data, Ecological Parameters and Vital Statistics.

Unit-IV

10. Nutrition Intervention Schemes in the community, lectures and Demonstrations, Nutrition Exhibitions and Visual Aids, SNP., ANP, Mid Day Meal Programme, FAO, WHO, UNICEF, CARE, AID, ICMR, CSIR, NIN, CFTRI.
11. Recent advances in community nutrition research.

Unit - V

12. Nutrition and Infection- Relationship, Immunization and its importance.
13. Fortification, Enrichment of Foods.
14. Nutrients and Drug Interaction.
15) Food Adulteration
16) Food Supplements
17) Food Additives

Twinkle

B.Sc. (SEMESTER-III & IV)

(PRACTICAL)

Clinical Nutrition & Dietetics

SEMESTER-IV

Marks-50

1. Menu planning and preparation of different dishes according to different stages and conditions of life.
   a) Pregnancy
   b) Lactation
   c) Weaning infant
   d) Childhood
   e) Adolescence
   f) Geriatric Nutrition
2. Planning and preparation of High and Low Calorie diet.
3. Planning and preparation of Liquid and Soft diet.
4. Preparation of Beverages.
5. Rice and Pulses preparation.
6. Preparation of plain and stuffed vegetable.
7. Preparation of Salad and Sauces.
8. Preparation of Snacks.
9. Preparation of Sweets.
10. Preparation of Bakery items.
11. Identification tests of Carbose, Proteins and Fats.
11. Estimation tests of Glucose, protein, Cholesterol, Blood and acetone etc in urine.
12. Estimation of Ascorbic Acid by 2-6 Di - Chlorophenol- indophenol method in different citrus foods

Twinkle

B.SC. Clinical Nutrition / B.Sc (H.Sc.)/ B.Sc. Food and Quality Control

IV Semester

ORGAN SPECIFIC DIETICS

CARDIO-NUTRITION

MARKS-60

- Anatomical & Histological Structure of heart
- Cardiac Muscle, Valves
- Nodes of the heart- Sino auricular node, auriculo- ventricular node, bundle of his, myocardium of heart
- Blood circulation in heart
- Function of heart (Types of circulation- Pulmonary and systemic circulation)
- Effect of Nutrients on health of heart-
  - Effect of Carbose
  - Effect of Protein
  - Effect of Lipids
  - Effect of Vitamins
  - Effect of Minerals
- Cardiac Enzyomology & its Importance
- Electrocardiogram and its Importance
- Heart sound and Its Importance
- Various diseases of Heart-

  Hypertension-
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
  Hypotension
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
  Myocardial Fibrillation and atrophy of Heart
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
  Brown Atrophy of heart
  Atherosclerosis-
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)
  Diseases of the cardiac valves
  (Epidemiology, Etiology, Symptoms, Complication, Treatments and diet therapy)

S.Bg- Suman Twinkle

HONOURS COURSES--IV SEMESTER
PRACTICAL
HEPATO NUTRITION & CARDIO NUTRITION

Marks-50

PART -I

- ✓ Observation of Histological Structure of Liver
- ✓ Study of various images of Healthy Liver -Sonographic and various images available n internet
- ✓ Study of Enzymatic Profile changes during various hepatic diseases
- ✓ Analysis of Serum for different parameters related to Health of Liver and changes n those parameters during various diseases
- ✓ Planning of Therapeutic Diets for Various Diseases of Liver
- ✓ Preparation of Therapeutic Diets for Various diseases of Liver

PART-II

- ✓ Observation of Histological structure of Heart
- ✓ Study of various Images of `Healthy Heart- Sonographic and various images available in Internet
- ✓ Study of Enzymatic Profile changes during various Cardiac diseases
- ✓ Analysis of Serum for different parameters related to Health of Heart and changes n those parameters during various diseases
- ✓ Analysis of Various Lipid Profile and Its relation with Cardiac Diseases
- ✓ Planning of Therapeutic Diets for Various Diseases of Liver
- ✓ Preparation of Therapeutic Diets for Various diseases of Liver

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Suman

Twinkle