SYLLABUS FOR FOUR YEAR INTEGRATED B.Sc. B.Ed. COURSE

FIRST YEAR

2021-22

JAI NARAIN VYAS UNIVERSITY
JODHPUR

Rules for Admission in INTEGRATED B.Sc. B.Ed. COURSE
(Four Years Course)

Admission rules for the INTEGRATED B.Sc. B.Ed. course shall be the same as decided by the NCTE/Government of Rajasthan from time to time. Reservation of seats for SC/ST/OBC/SBC/Specially-abled and others shall be as per existing Rajasthan Govt. /Central Govt. /University rules

A. Eligibility
   (a)   Candidate with at least 50% marks in the senior secondary /+2 or its equivalent are eligible for admission.
   (b)   The reservation and relaxation in marks for SC/ST/OBCPWD and other category shall be as per the rules of the Central Government/State Government whichever is applicable.

B. Admission Procedure for B.Ed.
   Admission shall be made on the basis of marks obtained in the qualifying Examination or through the entrance examination or any other selection process or as per policy decided by the State Government and the University time to time.

C. Duration and Working Days
   Duration
   The Integrated B.Sc. B.Ed.Programme shall be of duration of Four Academic Years, which must be completed in a Maximum of Six Years from the date of the admission to the programme.

   Working Days
   - There shall be at least Two Hundred Fifty Working Days each year exclusive of the period of examination and admission.
   - Institution shall work for a minimum of thirty six hours a week, during which physical presence in the institution of all the teachers and student teachers is necessary to ensure their availability for advice, guidance, dialogue and consultation as and when needed.
   - The minimum attendance of student-teachers shall be 80% for all course work and practical, and 90% for school internship.
   - Candidates falling short in above stated attendance criteria will not be allowed to appear in the final examinations conducted by the university.
   - There will be six days week system.
   - Candidates remaining absent from college for 15 or more days without any justifiable reason or without any valid information, their names will be struck off from the college roll list. Such candidates will have to seek readmission from a fresh end.

Criteria for Awarding Division

Successful candidates will be placed in three divisions both in theory and practice of teaching examination separately.
- **I Division:** Candidates obtaining 60% or more of aggregate marks
- **II Division:** Candidates obtaining 48% or more but less than 60% of the aggregate marks.
- **III Division:** Candidate obtaining 40% or more but less than 48% of the aggregate marks.

Rules: Examinations & Results

1. This integrated degree will include papers of B.Sc. as well as B.Ed in all four years. The university will conduct the examinations every year for all   papers (Except EPC) of three hours duration while the pedagogy paper will be of 2 hours duration in Fourth year.
2. In Fourth year there will be two pedagogy papers with an internal weightage of 15 marks. The External Assessment of both the papers will be done externally at the university level for 35 marks. For a pass in pedagogy papers candidate will have to obtain 6 marks in internal & 14 marks in external.
3. Internship activities will be compulsory for students. Failing to attend /perform anyone of the mentioned activities shall result into a failure in that year.

4. It is mandatory for any student to attain 90% attendance in internship programme, failing which; they will be declared fail in that year.
5. Candidates will have to obtain 40% marks in theory, Internal & practical separately.
6. There shall be two Summative tests of 10 marks each in each paper of this course.
7. In the papers of B.Ed. besides summative assessment candidates will conduct/prepare a report of 2 activities in each paper carrying 5 marks for activities & 5 marks for documentation. Out of 30 internal marks a candidate will have to get a minimum of 12 marks for a pass. Candidates failing to obtain 12 marks out of 30 in the above-said activities shall be eligible to become an Ex-student.
8. In EPC Papers candidates will conduct/prepare a report of 5 activities in each paper carrying 15 marks for activities in each paper &15 marks for documentation. Out of 50 internal marks a candidate will have to get a minimum of 20 marks for a pass. Candidates failing to obtain 12 marks out of 30 in the above-said activities shall be eligible to become an Ex-student. If any candidate doesn't obtain minimum 20 marks in internal paper of 50 marks in that case, they will be promoted in next year but in due course they will have to reappear in test/activities to pass that paper. The marks of the other papers and activities will be carrying forwarded.
9. Candidates failing in more than two external papers will be declared fail & they will have to reappear in next year in all the theory papers. However, their internal marks can be carry-forwarded.
10. Candidates failing in two or less than two papers in internal will be allowed a promotion in next year, provided that they reappear in them at later stages. However, any candidate can get this benefit of promotion in a maximum of two papers internals & externals combined together. However, their internal marks can be carry-forwarded.
11. B.Sc. Practicals of all the papers of particular subject (Botany/ Zoology/chemistry/ Physics) will be conducted prior to theory examinations with the allotted marks for each subject.
12. B.Sc. Practical Examination of all the papers of particular subject (Botany/ Zoology/chemistry/ Physics) will be conducted by the board of examiners consisting of two examiners (Faculty member of that subject) only.
13. A candidate will have to obtain 40% marks separately in the final lesson of B.Ed. Candidates failing in the final lesson will be declared fail. To pass the final lesson he/she has to appear in final lesson Examination next year and has to pass. Maximum of two chances will be given to pass final lesson exam. However, as an Ex-student, they can carry-forward their all other internal and external marks including Internship Marks.
14. Internship activities in third year will be of 06 weeks and will include teaching of both the pedagogy subjects, one week observation, criticism lessons & Action Research/Survey/Case Study (Any one). All the above said activities will be compulsory for students. Failing to attend /perform anyone of the above-said activities shall result into a failure in that year. These activities are-
    (i) Candidates have to practice five skills (assigned by college) in microteaching as a part of pre –internship activity. Each Skill will be performed twice as teach and reteach . They have to maintain the record of the micro lessons delivered.
    (ii) Co-curricular & Extra-curricular activities must be spread all through the year which should also include special days' celebration.
    (iii) To understand the local resources, people & community, an open air session of two days' will be conducted. It includes survey of that area as well as community work. Record of the work down is to be maintained.
    (iv) Individual appraisal of the student-teachers will be done by the supervisor through a portfolio on some set criteria about their year-long activities, individual attributes & personal qualities like discipline, honesty, dedication, commitment etc.
    (v) Internship of 6 weeks includes initial six days for general observation of the ongoing school activities & classroom teaching of the host teachers.
    (vi) The students will deliver at least 15 lessons of each pedagogy paper. It is expected that the students play the participative role in all school activities and take necessary responsibilities as and when required. If required they can take all vacant and required classes.
    (vii) There will be two criticism lessons (one in each pedagogy subject) for the progressive assessment of   the student-teacher.

(viii)   The student-teacher will have to do an Action Research or Survey or a Case Study (Any one) as assigned by the concerned supervisor and will submit the report.

15.   In fourth year, the total internship program will be spread in duration of 14 weeks. This rigorous internship in surrounding schools will enable the student-teacher to perform better as a teacher. Only 10 students will be allowed to deliver lessons in a school. During internship program the student-teacher will ensure that they get a teaching exposure of   secondary and senior secondary level preferably. Activities to be performed are as under-

(i) Co-curricular & Extra-curricular activities (in college) must be spread all through the year which should also include special days' celebration.

(ii) Individual appraisal of the student-teachers will be done on some set criteria about their year-long activities, individual attributes & personal qualities like discipline, honesty, dedication, commitment etc.

(iii) School internship will include the participation of the Student- teacher in all the activities of the school including teaching.

(iv) The student teacher will prepare a project report on the various aspects of the school on some set criteria where internship will be performed.

(v) The student teacher will deliver at least 5 ICT based lessons while doing the internship.

(vi) Co-curricular & Extra-curricular activities (in School) must be spread all through the internship program which should also include special days' celebration

16. Each candidate should be prepared to teach two lessons (One in each Pedagogy subject) at the final Practical Examination. However, the candidates will deliver one lesson (in the subject of their choice) for final practical out of prepared two lessons. The external examiner may pick up at least 10% of the candidate to deliver two lessons (if required), Lessons to be assessed by the Board of Examination consisting of:

(a) one external examiner of Science Pedagogy.

(b) Two internal examiners of whom one would be the Principal of the College and other would be a member of the faculty of the College of Science Pedagogy and marks will be awarded out of 100.

17.   Candidate will be awarded degree of this course only when he/she has passed all the papers, as well as EPC Papers of all four years. This includes Theory, Internals, Internship and Practicals

Scheme of Examination

The examination for the degree of B.Sc. - B.Ed. shall be held in Theory, Practical and Practice of teaching.

Paper-wise scheme of examination: Theory

B.Sc.-

As mentioned with each paper for all the years in the syllabus.

B.Ed.-
Papers with External weight-age of 70 Marks (3 hours duration)
1. One essay type question will be set from each unit carrying 14 marks. There will be an internal choice of attempting two questions of short answer type (with a word limit of 200 words) from the same unit. Each short answer type question will carry 7 marks.
2.   **Internal weight-age of 30 will be divided as under:**
Assessment in the papers with internal weight-age of 30 marks will be divided in following parts.
(i) Summative test I (10 Marks) On completion of 50 percent course
(ii) Summative test II (10 Marks) On completion of 90 percent course
(iii) There will be a provision of Sessional work in each paper with 10 marks weightage. Out of the suggested Practicum/field work, it will be compulsory to attempt atleast two activities ensuring that

a minimum of two units have been covered in the same. Students have to maintain a record/portfolio etc. as per the nature of related activity. 10 Marks will be bifurcated - 50 percent for conducted activities and 50 percent for documentation of conducted activities.

3. **Pedagogy Papers (in fourth year) with External weight-age of 35 Marks will be divided in two parts A & B (2 hours duration)**

Part-A

In part -A Three short answer type questions (Answer limit 150 words) will be set; one question from each unit. Candidate will attempt 2 questions out of three. Each question will carry 4 marks.

Part-B

There will be three essay type questions, one from each unit with an alternative choice. Each question will carry 9 marks.

- Assessment in the papers with internal weight-age of 15 marks (Pedagogy Courses in fouth year) will be divided in 2 parts. Only one summative test will be conducted for 10 marks & the rest 5 marks will be awarded for participating & documentation of the practicum activities suggested with syllabus.

General Rules

1. Candidates can apply for re-evaluation in any of the theory papers as per rules stipulated by the University for B.Sc.-B.Ed. degree. Changes in statutes/ordinances/rules/regulations/syllabi and books may from time to time be made by amendment or remaking and a candidate shall, except in so far as the university determines otherwise, comply with any change that applies to years he/she has not completed at the time of change.
2. B.A. Optional Subjects Can be chosen as per University rules
3. Pedagogy Subjects in the third and fourth year of B.Ed. will be Chosen as per NCTE norms.
4. General Science may be allowed to be offered by a candidate possessing B.Sc. with Chemistry and any one subject of Life Sciences i.e. Biology or Botany or Zoology.

B.Sc. B.Ed. Four Years Integrated Course
BOTANY
B. Sc. I Year : 2021-22

Course/ Theory	Nomenclature	Number of Papers	Number of Periods per week	Max. Marks		Total Marks	Min. Pass Marks
				Internal	External		
Paper I	Algae, Lichens and Bryophytes	1	2	10	40	50	40
Paper II	Mycology, Microbiology and Phytopathology	1	2	10	40	50	
PRACTICAL COURSE			3 x 2	10	40	50	20

Duration of examination of each theory papers   3 hours

Duration of examination of practical (for both papers on same day)   5 hours

Note: Each theory paper is divided in three parts i.e. Section-A, Section –B and Section–C.

Section-A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited up to 30 words. Each question will carry of 1 mark.

Section –B: Will consist of 10 questions. Each unit will be having two questions; students will answer one question from each Unit. Answer of each question shall be limited up to 250 words. Each question carries 3 Marks

Section-C: Will consist of total 05 questions, one question from each unit. Students will answer any 03 questions and answer of each question shall be limited up to 500 words. Each question carries 5 Marks.

PAPER – I
ALGAE, LICHENS AND BRYOPHYTES

Unit 1: General characters, Classification and economic importance of Algae. Important features and life history of Chlorophyceace and Charophyceae. Structure and life cycle of *Volvox, Oedogonium*, *Coleochaete* and *Chara*.

Unit 2: Important features and life history of Xanthophyceae and Phaeophyceae. Structure and life cycle of *Vaucheria*, *Ectocarpus* and *Sargassum*.

Unit 3: Important features and life history of Rhodophyceae. Structure and life cycle of *Polysiphonia*. Lichens: Morphology and structure of the two components; biological, ecological and economic importance. Vegetative multiplication methods with special reference to *Parmelia* and *Usnea*.

Unit 4: Bryophytes: General characters, alternation of generations and classification. characters and classification of Hepaticopsida. Morphology and life history of *Riccia, Marchantia* and *Plagiochasma*.

Unit 5: Characters and classification of Anthocerotopsida and Bryopsida. Morphology and life history of *Anthoceros* and *Sphagnum*.

Suggested Laboratory Exercises
Algae: Microscopic preparation and study of following algal materials: *Volvox, Oedogonium, Coleochaete, Vaucheria, Chara, Ectocarpus, Sargassum* and *Polysiphonia*

Lichens: Study of Lichens
Bryophytes: Study of external morphology and microscopic preparations of following
Bryophytes: *Riccia*, Marchantia*, Plagiochasma, Anthoceros* and *Sphagnum*

Suggested Readings
Bold, H.C., Alexopoulous, C.J. and Delevoryas, T. Morphology of Plant and Fungi (4th Ed.) Harper & Foul Co., New York, 1980.
Ghemawat, M.S., Kapoor, J.N. and Narayan, H.S. A Text book of Algae, Ramesh Book Depot, Jaipur, 1976.
Gilbert, M.S. Cryptogamic Botany, Vol. I & II (2nd Ed.), Tata McGraw Hill, Publishing Co. Ltd., New Delhi, 1985.
Kumar, H.D. Introductory Phycology, Affiliated East–West Press, Ltd., New York, 1988.
Pandey, S.N. and Trivedi, P.S. A Text Book of Botany 2000 Volume I, Vikas Pub. House Pvt. Ltd., New Delhi.
Puri, P. Bryophytes, Atmaram & Sons, Delhi, Lucknow, 1985.
Singh, V., Pande, P.C. and Jain, D.K.A Text Book of Botany, Rastogi & Co., Meerut, 2016.
Vashista, B.R. Botany for Degree Students (Algae, Fungi Bryophyta), S. Chand & Co. Ltd., New Delhi, 2016.

PAPER -II
MYCOLOGY, MICROBIOLOGY AND PHYTOPATHOLOGY

Unit I: General characters, classification and economic importance of fungi. Important features and life history of Mastigomycotina–*Pythium* and *Albugo*; *Zygomycotina–Rhizopus*; *Ascomycotina–Saccharomyces, Aspergillus* and *Penicillium*.

Unit II: Important features and life history of Basidiomycotina– *Puccinia, Agaricus* and wild Mushroom and *Ustilago*; Deuteromycotina–*Collectotrichum* and *Alternaria*.

Unit III: Viruses: Chemical and physical nature; Structure, multiplication and transmission of plant viruses; Tobacco mosaic virus and yellow vein mosaic virus disease. General account of Viroids, AIDS and Prions.

Unit IV: Bacteria–Structure, nutrition, cell division, reproduction and economic importance. Biofilms and Quorum sensing in microbes. Cyanobacteria–Life history of *Nostoc* and *Oscillatoria*; Nitrogen fixation – by BGA (Blue green algae). General account and biology of Mycoplasma and Phytoplasma.

Unit V: Causes and symptoms of plant diseases with special reference to green ear disease of Bajra, smut of wheat, citrus canker, little leaf of brinjal and root knot disease. A brief account of principles of plant protection.

Suggested Laboratory Exercises
Microscopic preparation and study of following fungal materials: *Albugo, Rhizopus, Saccharomyces, Aspergillus, Penicillium, Ustilago, Agaricus,* local Mushroom¸ *Colletotrichum* and *Alternaria*.

Viruses: Study of disease symptoms caused by Tobacco mosaic virus and yellow vein mosaic virus.
Bacteria: Gram staining of bacteria. *Nostoc, Oscillatoria* and study of bacteriological specimens.
Study of symptoms of following diseases: (specimen or photographs)
Green ear disease of bajra
Smut of wheat
Citrus canker
Rust of wheat
Little leaf of bringal
Root knot nematode.

Suggested Readings

Alexopoulos, C.J. and Mims.Introductory Mycology, John Wiley and Sons, New York, 2000.

Bilgrami, K.S. and Dube, H.C. A Text Book of Modern Plant Pathology, Vikas Publ. House, New Delhi, 1976.

Biswas, S.B. and Biswas, A. An Introduction to Viruses, Vikas Publ. House, New Delhi, 2000.

Clifton, A. Introduction to Bacteria, McGraw Hill Co., New York, 1985.

Dube, H.C. Fungi, Rastogi Publication, Meerut, 1989.

Kaushik, P. Microbiology, Emkay Publication, 2001.

Madahar, C.L. Introduction to plant viruses, S. Chand & Co. Ltd., New Delhi, 1978.

Palezer, Chan and King. Microbiology, McGraw Hill Book Co., London, 1995.

Pathak, V.N. Fundamentals of Plant Pathology, Agro Botanica. 2000.

Purohit, S.S. Microbiology, Agro. Bot. Publication, Jodhpur, 2002.

Sharma, O.P. Fungi, Today and Tomorrow Publication, 2000.

Sharma, P.D. Microbiology and Plant Pathology, Rastogi Publ. Meerut, 2003.

Singh, V. and Srivastava, V. Introduction to Bacteria, Vikas Publication, 1998.

Vashista, B.R. Botany for Degree Student Fungi, S. Chand & Co., New Delhi, 2016.

DEPARTMENT OF BOTANY CENTER
OF ADVANCED STUDY

JAI NARAIN VYAS UNIVERSITY, JOHDPUR

Time : 4 Hours

(B.Sc. B.Ed. Part I Practical Examination : 2021-22)

Max. Marks: 50 Min.
Pass. Marks: 20

Q. 1. **Make suitable preparation of the given material A Bryophyta)** **8**
Identify and comment upon your preparation Leave your
preparation for inspection.

Q. 2. **Make suitable preparation of the given material B (Fungi)** **6**
Identify and comment upon your preparation
Leave your preparation for inspection.

Q. 3. **Make suitable preparation of the given material C (Algae)** **6**
Identify and comment upon your preparation
Leave your preparation for inspection.

Q. 4. **Make suitable preparation of the given material D (Microbiology)** **3**
Identify and comment upon your preparation
Leave your preparation for inspection.

Q. 5. **Identify and comment upon the given spots 1 to 6 (covering**
all disciplines of both Theory Papers) **2x6 = 12**

   1. _____

   2. _____

   3. _____

   4. _____

   5. _____

   6. _____

Q. 6. Practical record **5**

Internal Assessment **10**

TOTAL 50

CHEMISTRY 2021-22

Course	Nomenclature	Number of Papers	Number of Periods per week	External	*Internal	**Practical	Total
Paper I	INORGANIC CHEMISTRY	1	2	50	20	30	100
Paper II	Organic Chemistry	1	2	50	20	30	100
	PRACTICAL COURSE		2				

Duration of each theory paper   3 hours
Duration of practical examination   4 hours

NOTE- *There shall be two summative tests of 10 marks each; Out of 20 internal marks a candidate will have to get a minimum of 8 marks for a pass.

**In practical examination out of 30 marks students have to score minimum of 11 marks to pass

Note: Each theory paper is divided in three parts i.e. Section-A, Section –B and Section–C.
Section-A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited up to 30 words. Each question will carry of 1 mark.
Section –B: Will consist of 10 questions. Each unit will be having two questions; students will answer one question from each Unit. Answer of each question shall be limited up to 250 words. Each question carries 3.5 Marks.
Section-C: will consist of total 05 questions. Students will answer any 03 questions and answer of each question shall be limited up to 500 words. Each question carries 7.5 Marks.

PAPER -I
INORGANIC CHEMISTRY

UNIT: I

Chemical Bonding-Covalent bond

Valence bond theory and its limitation, Directional characteristics of covalent bond, Hybridizations-sp, sp^2, sp^3, dsp^2, sp^3d, dsp^3, sp^3d^2 and d^2sp^3 with suitable examples. Shapes of inorganic molecules and ions.

Valence shell election pair repulsion (VSEPR) theory and its application to study the geometry of NH_3, H_2O, H_3O^+, SF_4, ICl^-_2, ClF_3, ICl^-_4, XeF_4, XeF_6, molecules. Molecular orbital theory and molecular orbital diagrams for homo and heterodiatomic molecules- H_2, H_2^+, He_2^+, HHe^+, Li_2, Be_2, B_2, C_2, N_2, O_2, F_2, O_2^+, O^-_2, O_2^{2-}, O_2^{2+}, CO and NO.

Bonding in diborane (3c-2e bonding).

UNIT: II

Chemical Bonding- Ionic Bond

Lattice energy and Born-Haber cycle. Solvation energy, solubility of ionic solids, Fajan's rule, polarizing power and polariziblity of ions.

Structures of ionic solids, radius ratio effect and co-ordination number. Limitations of radius ratio rule.

Hydrogen bonding and vander-waal's forces of attractions.

UNIT: III

s-Block elements

Periodicity in properties of alkali and alkaline earth metals. Complexation tendency, Solvation tendency, stability and solubilities of carbonates, bicarbonates and sulphates of Magnesium and Calcium, Synthesis and applications of important hydrides: NaH, $NaBH_4$, LiH, $LiBH_4$, $LiAlH_4$ and CaH_2.

Cement: Composition and types of Cement, Manufacture of Portland cement.

Lime: Industrial preparation, Properties and Uses.

UNIT: IV

p-Block elements

Periodicity in properties of III A, IV A, V A, VI A and VII A group elements.

Silicates, oxides of nitrogen, phosphorous and sulphur- their structure and preparations.

Glass: Types and properties of glasses, coloring agents, Industrial manufacturing of glass.

Nitrogen fixation- Natural and Artificial fixation. Role of nitrogenase in biological nitrogen fixation.

UNIT: V

Qualitative Analysis

Theoretical basis of qualitative analysis, Systematic analysis of Acidic and Basic radicals (including interfering radicals). Chemical reactions involved.

Common- ion effect, solubility product & their applications. Oxidizing and reducing agents and buffers used in analysis.

Books Recommended:

1. Inorganic Chemistry by Satya Prakash
2. Inorganic Chemistry by R.C. Agarwal
3. Inorganic Chemistry by B.R. Puri and L.R. Sharma
4. Inorganic Chemistry by P.L. Soni
5. Inorganic Chemistry by G.C. Shivhare and V.P. Lavania
6. Inorganic Chemistry for B.Sc. I yr by Vikal Gupta
7. Practical Chemistry by Giri, Bajpai and Pandey

PAPER -II
Organic Chemistry

UNIT: I

Mechanism of Organic Reactions

Classification of organic compounds their general characteristics. Types of reagents – electrophiles and nucleophiles. Types of organic reactions. Reactive intermediates – carbocations, carbanions, free radicals, carbenes, arynes and nitrenes (with examples). Assigning formal charges on intermediates and other ionic species. Methods of determination of reactions mechanism (product analysis, intermediates, isotope effects, kinetic and stereochemical studies).

UNIT: II

Stereochemistry of Organic Compounds

Concept of isomerism. types of isomerism

Optical isomerism – elements of symmetry, molecular chirality, enantiomers, stereogenic center, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centers, diastereomers, threo and erythro diastereomers, meso compounds, resolution of enantiomers, inversion, retention and racemization. Relative and absolute configuration, sequence rules, D & L and R & S systems of nomenclature.

Geometric isomerism : Determination of configuration of geometric isomers. E & Z system of nomenclature, geometric isomerism in oximes and alicyclic compounds.

Conformational isomerism :Newman projection and Sawhorse formulae, Fischer and flying wedge formulae. Difference between configuration and conformation.

Conformational analysis of ethane and n-butane; conformations of cyclohexane, axial and equatorial bonds, conformation of mono substituted cyclohexane derivatives.

UNIT: III

Alkanes , Cycloalkanes, Dienes and Alkynes

Mechanism of free radical halogenation of alkanes: orientation, reactivity and selectivity Cycloalkanes – nomenclature, methods of formation, chemical reactions, Baeyer's strain theory and its limitations. Ring strain in small rings (cyclopropane and cyclobutane), theory of strainless rings. The case of cyclopropane ring: banana bonds.

Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of allenes and butadiene, methods of formation, polymerization. Chemical reactions – 1, 2-and 1, 4-additions, Diels-Alder reaction.

Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidic nature of 1-alkynes. Mechamism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation, oxidation and polymerization.

UNIT: IV

Arenes and Aromaticity

Nomenclature of benzene derivatives. Aryl group. Aromatic nucleus and side chain. Structure of benzene: molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, MO picture.

Aromaticity: the Huckel rule, aromatic ions.

Aromatic electrophilic substitution – general pattern of the mechanism, role of σ- and π-complexes. Mechanism of nitration, halogenation, sulphonation, mercuration and Friedel-Crafts reaction. Energy profile diagrams. Activating and deactivating substituents, orientation and ortho/para ratio. Side chain reactions of benzene derivatives. Birch reduction.

Methods of formation and chemical reactions of alkylbenzenes, Structure, preparation and properties of naphthalene.

UNIT: V

Alkyl and Aryl Halides

Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms of nucleophilic substitution reactions of alkyl halides, S_N2 and S_N1 reactions with energy profile diagrams. Mechanism of elimination reactions of alkyl halides, regioselectivity in dehydrohalogenation, Saytzeff rule.

Methods of formation of aryl halides, nuclear and side chain reactions. The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions.

Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides towards nucleophilic-substitution reactions. Synthesis and uses of DDT and BHC.

Books Recommended:

1. Advanced Organic Chemistry by Mukheri and Kapoor Vol. I & II
2. A Text Book of Organic Chemistry by M.K. Jain
3. A Text Book of Organic Chemistry by R.K. Bansal
4. Organic Chemistry, R.T. Morrison and R.N.Boyd, Prentice-Hall
5. Organic Chemistry for B.Sc. I yr by Vikal Gupta

B. Sc. B.Ed. I Year (Practicals)

1. Inorganic Chemistry: [20]

Qualitative analysis of inorganic mixture containing 5-radicals (anions and cations), separation and identification of (group 0, I, II, III, IV, V and VI) and anions including interfering radicals and special combination of acidic radicals (CO_3^{2-}, SO_3^{2-}; NO_3^-, NO_2^-; NO_3^-, Br^-; Cl^-, Br^-, I^-; S^{2-}, SO_3^{2-}, SO_4^{2-})

2. Physical Chemistry: [15]

(a) Viscosity:

(I) To determine the viscosity of the given organic liquid by Ostwald Viscometer

(II) To determine the % composition of a binary solution by Viscosity measurement.

(b) Surface Tension:

(I) To determine the surface tension of a given organic liquid by Stalagmometer.

(II) To determine the % composition of a binary solution by surface tension measurement.

B.Sc. B.Ed. First Year Integrated Course

Academic Session 2021-22 TEACHING AND EXAMINATIION SCHEME

Subject/Paper	Period/Week		Exam. Hours	Theory Paper	*Summative* Test
	L	**P**			
MATHEMATICS					
Paper I	**3**	**-**	**3**	**60**	**15**
Paper II	**3**	**-**	**3**	**60**	**15**

Paper   I : Algebra and Co-ordinate Geometry of Two Dimensions.

Paper   II : Calculus

Exam. Hours: 03:00   **Max. Marks: 60**

Paper I

Algebra and Co-ordinate Geometry of Two Dimensions

Note: Each theory paper is divided in three parts i.e., Section – A, Section – B and Section – C

Section A will consist of 10 compulsory questions. There will be two questions from each unit and answer (30 words). Each question carries 1 mark.

Section B will consist of 10 questions. Two questions from each unit and the examinee will answer (250 words) one question from each Unit. Each question carries 4 marks.

Section C will consist of 5 questions, one from each unit. The examinee will answer any 03 questions (with answer limit of 500 words). Each question carries 10 marks.

Unit1: Unit1: The characteristic equation of a matrix, Eigen values and Eigen vectors, Cayley-Hamilton theorem and its usage in finding the inverse of a matrix. ***Rank of Matrix,*** Inequalities. Continued fractions.

Unit 2: Relations between the roots and coefficients of general polynomial equations in one variable, Symmetric functions of roots, Transformation of equations. Descarte's rule of signs. Solution of cubic equations (Cardon's method). Biquadratic equations (Ferrari's Method).

Unit 3: Infinite series. Convergent series, tests for convergence of a series, comparison test, D'Alembert's Ratio test, Cauchy's root test, Logarithmic Ratio Test. Raabe's test, De Morgen and Bertrand's test, Cauchy's condensation test, Gauss's test. Alternating series, Leibnitz test (Derivation of above tests not required).

Unit 4 : Polar equation of a conic, polar equations of tangent, normal, asymptotes, chord of contact, auxiliary circle, director circle of a conic and related problems.

Unit 5 : General equation of second degree. Tracing of conics (Cartesian coordinates).

SUGGESTED BOOKS

M. Ray : A Text Book of Higher Algebra, S.Chand & Co., New Delhi

Bansal, Bhargva, Agarwal : Algebra (Hindi Ed.), Jaipur Publishing House, Jaipur. Bansal, Bhargava : 2-D Coordinate Geometry (HindiEd) Jaipur Publishing House, Jaipur. Sharma, Varshney : Coordinate Geometry, Pragati Prakashan, Meerut.

Gokhroo, Saini, Oza : 2-D Geometry (Hindi Ed.), Navkar Publication, Ajmer.

Exam. Hours: 03:00   **Max. Marks: 60**

Paper – II Calculus

Note: Each theory paper is divided in three parts i.e., Section – A, Section – B and Section – C

Section A will consist of 10 compulsory questions. There will be two questions from each unit and answer (30 words). Each question carries 1 mark.

Section B will consist of 10 questions. Two questions from each unit and the examinee will answer (250 words) one question from each Unit. Each question carries 4 marks.

Section C will consist of 5 questions, one from each unit. The examinee will answer any 03 questions (with answer limit of 500 words). Each question carries 10 marks.

Unit 1: Polar Co-ordinates. Angle between radius vector and the tangent. Angle between curves in polar form. Length of polar substangent and polar subnormal, Pedal equation of a curve, Derivatives of an arc, curvature, various formulae, Centre of curvature and chord of curvature and related problems.

Unit2: Partial differentiation, Euler's theorem on homogeneous functions, chain rule of partial differentiation, Maxima and Minima of functions of two independent variables and of three variables connected by a relation, Lagrange's Method of undetermined multipliers.

Unit 3: Asymptotes, double points, curve tracing, Envelopes and evolutes.

Unit 4: Theory of Beta and Gamma functions. Rectification. Volume and Surfaces of solids of revolution. Differentiation and integration under the sign of integration.

Unit 5: Evaluation of double and triple integrals and their applications in finding areas and volumes. Dirichlet's integral. Change of order of integration and changing into polar co- ordinates.

SUGGESTED BOOKS
Gorakh Prasad: A Text Book of Differential Calculus; Pothishala Pvt.Ltd.Allahabad

Bansal, Bhargava and Agarwal : A Text Book of Differential Calculus II (Hindi Ed.) and Integral Calculus, Vol. II (Hindi Ed.); Jaipur Publishing House, Jaipur
Gokharoo, Saini : Differential Calculus (Hindi Ed.); Navkar Prakashan, Ajmer.
Tandon, O.P. and Sharma, K.C. : Integral Calculus; Jaipur Publishing House,
Jaipur Gupta, Juneja and Tandon : Differential Calculus (English Ed.);Ramesh
Book Depot, Jaipur.
Gorakh Prasad : Integral Calculus; Pothishala Pvt.Ltd.Allahabad

B. Sc. – B. Ed. I Year

PHYSICS 2021-22

Course	Nomenclature of Theory Papers	Number of Periods per week	Exam. Hours	Univ. Exam.	*Internal	Total
Paper I	MECHANICS	2	3	40	10	50
Paper II	OPTICS	2	3	40	10	50
PRACTICAL COURSE		3 X 2	5	40	10	50

PAPER -I
MECHANICS

Unit I: Frames of Reference: Inertial frames, Galilean transformations, Non-inertial frames, fictitious forces, Displacement, Velocity and acceleration in rotating coordinate systems and their transformations, Coriolis force, Focault's pendulum, Motion relative to earth. Centre of Mass, collision of particles in laboratory and C.M. frame.

Unit II: Special Theory of Relativity: Invariance of c, Michelson-Morley Experiment, Lorentz transformations, addition of velocities, time dilation and length contraction, conservation of momentum in collision at relativistic speeds and variation of mass with velocity, relativistic energy, mass-energy equivalence, work and energy, transformation equations for momentum, energy and rate of change of momentum.

Unit III: Oscillations: Qualitative idea of oscillations in an arbitrary potential well, General differential equation for the harmonic motion, mass on a spring, oscillation of two masses connected by a spring, reduced mass, coupled oscillations, normal modes, normal coordinates of two linear coupled oscillators, damped harmonic motion, Forced oscillations and resonances, Resonance width and quality factor.

Unit IV: Waves: General differential equation of one dimensional wave motion and its solution,
plane progressive harmonic wave, differential calculus methods for speed of transverse waves on a uniform string and for that of longitudinal waves in a fluid, energy density and energy transmission in waves, superposition of waves, group and phase velocity.
Fourier series, Fourier analysis of square and saw-tooth waves.

Unit V: Rigid Body Dynamics: Equation of motion of a rotating body, angular momentum of a rigid body, inertial coefficient and idea of principal axes, case of j not parallel to ω, kinetic energy of
rotation.
Elasticity : Young modulus, Bulk modulus and modulus of rigidity, Poisson ratio, relation between elastic constants, Theory of bending of a beam and torsion of a cylinder, experimental determination of Y by loading a beam in the middle and of η by static and dynamic methods, Searle's two bar experiment.

Books suggested

Berkeley: Physics Course, Vol. I, Mechanics, Tata McGraw Hill, New Delhi.
Berkeley: Physics Course, Vol. III, Waves and Oscillations, McGraw Hill, New Delhi.
A. P. French: Physics of Vibration and Waves.
Alonso and Finn: Fundamental University Physics, Vol. I, Mechanics.
R. S. Gambhir: Mechanics, CBS Publishers.
J.C. Upadhyaya: Mechanics, Ram Prasad & Sons, Agra.

PHYSICS
PAPER -II
OPTICS

Unit I: Geometrical Optics: Axial, Lateral and angular magnifications and their inter-relationship,
Abbe's Sine condition for spherical surfaces, Aplanatic points for a spherical refracting surface.
Focal length of two thin lenses separated by a distance, Cardinal points of a co-axial lens system, properties of cardinal points, construction of image using cardinal points, Newton's formula and other relations for a lens system using cardinal points, Ramsden's and Huygen's eye pieces, their cardinal points, and relative merits.

Unit II: Interference: Division of Amplitude-Interference exhibited by thin film, Production of colours in thin films, Wedge-shaped film, Newton's rings and determination of wavelength and refractive index of a liquid by Newton's rings.
Michelson Interferometer: Measurement of wavelength and difference between two close wavelengths.
Fabry-Perot interferometer: Intensity Distribution, Co-efficient of sharpness and half width, measurement of wavelength.

Unit III: Lasers: Population inversion, laser as source of coherent radiation, Basic principles of He-Ne Laser and Ruby Laser.
Diffraction: Fresnel's class of diffractions, Zone Plate, Phase reversal Plate, Cylindrical wave front and its effect at an external point and geometrical construction, diffraction at a straight edge; thin wire, rectangular slit and circular aperture.

Unit IV: Fraunhofer class of diffraction: Amplitude and phase due to a number of SH Motions acting on a particle simultaneously, Diffraction at two slits and intensity distribution, Diffraction at N slits.
Plane Transmission Grating: Theory and formation of spectra, width of principal maxima, absent spectra, overlapping of spectral lines, number of spectra, measurement of wave-length of light, Rayleigh's criterion, Resolving Power of a Prism, Telescope, Microscope and plane transmission grating.

Unit V: Polarization: Double refraction, production of plane polarized light by double refraction,
Nicol Prism, Double refraction in uniaxial crystals, Huygen's explanation of Double Refraction, Plane, circular and elliptically polarized light, Half-wave and quarter-wave plates, production and detection of plane, circularly and elliptically polarized light by Nicol Prism and Quarter-wave plate.
Rotatory Polarization, Fresnel's explanation, specific rotation, half shade and BiquartzPolarimeter, determination of specific rotation and strength of sugar solution.

Books suggested:
Jenkins and White: Optics, McGraw Hill.
Ghatak A.K.: Optics, Tata McGraw Hill.
Khandelwal D.P.: Optics and Atomic Physics, ShivlalAgarwal& Co.
Subramanayam and Brijlal: A text book of Optics, S.Chand New Delhi.

EXPERIMENTS FOR PRACTICAL WORK

Note: Any 15 experiments to be performed by all the students out of following list.

1. Study of bending of a beam and determination of Young's modulus.
2. Modulus of rigidity by statical method using horizontal apparatus.
3. Modulus of rigidity by statical method using vertical apparatus.
4. Elastic constants by Searle's method.
5. Nodal slide, determination of cardinal points of a combination of two lenses.
6. Formation of spectrum, prism spectrometer and determination of dispersive power of the material of a prism.
7. Wavelength of light by Newton's rings.
8. Wavelength of light by plane transmission grating.
9. Wavelength of light by biprism.
10. Specific rotation by polarimeter.
11. Resolving power of telescope.
12. To determine the Poisson's ratio of a rubber tube.
13. Determination of surface tension of water by Jagger's method.
14. Resolving power of a plane transmission grating.
15. To determine the polarizing angle for the glass prism surface and to determine the refractive index of material of prism using Brewster's law.
16. Modulus of rigidity by dynamical method using Hollow Maxwell needle.
17. Modulus of rigidity by dynamical method using Solid Maxwell needle.
18. Verification of Malus law.
19. Determine the thermodynamic constant $\gamma = C_p/C_v$ using Clement and Desormes method.
20. Verification of Rutherford and Soddy's law of radioactive disintegration using dices and statistical Board.

Note: - New experiments may be added on availability of equipments.

DEPARTMENT OF ZOOLOGY

Course	Nomenclature	Marks Per Paper/ Practical Board	Number of Periods per week	Internal Marks	University Examination Marks	Total for the Year	Min. Pass Marks
Paper I	Animal Diversity and Evolution	Theory 50	2	Theory 10	Theory 40	50	40
Paper II	Biology of Non chordates	Theory 50	2	Theory 10	Theory 40	50	
PRACTICAL COURSE (One Board)		Practical 50	3 X 2	Practical 10	Practical 40	50	20

Duration of examination of each theory papers   3 hours
Duration of examination of practical (for both papers on same day)   4 hours

Note: Each theory paper is divided in three parts i.e. Section-A, Section –B and Section –C.

Section-A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited up to 30 words. Each question will carry of 1 mark.

Section –B: Will consist of 10 questions. Each unit will be having two questions; students will answer one question from each Unit. Answer of each question shall be limited up to 250 words. Each question carries 3 Marks.

Section-C: will consist of total 05 questions. Students will answer any 03 questions and answer of each question shall be limited up to 500 words. Each question carries 5 Marks.

Animal Diversity and Evolution

Functional morphology of the types included with special emphasis on the adaptations to their modes of life and environment. General characters and classifications of all invertebrate phyla up to class with examples emphasizing their biodiversity, economic importance and conservation measures where required.

Unit 1: General principles of taxonomy, concept of the five-kingdom, Concept of Protozoa, Metazoa and Levels of organization. Basis of classification of non-chordata: Symmetry, coelom, segmentation and embryogeny, Characters and Classification of Protozoa and Porifera upto classes with examples.

Unit 2: Salient features and classification of Coelenterata, Ctenophora, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca and Echinodermata with their suitable examples.

Unit 3: Origin of Life, Miller's experiment, Lamarckism and Darwinism, Natural Selection, genetic basis of evolution, speciation, Evidences of organic evolution.

Unit 4: Variations, Isolation and Adaptations, Geological time scale and animal distribution in different era.

Unit 5: Principal zoogeographical regions of the world with special reference to their mammalian fauna, Factors affecting the large scale animal distribution, Origin and evolution of man.

PAPER II

Biology of Nonchordates

Unit 1: *Euglena:* Ultrastructure of flagellum and flagellar movement, osmoregulation and behaviour, reproduction.
Paramecium: Locomotion, nutrition, osmoregulation and reproduction. *Sycon*: Cellular organization, canal system, reproduction and development.

Unit 2: *Obelia:* Structure of polyp and medusa, sense organs and reproductive systems, life cycle.
Fasciola: Digestive, excretory and reproductive systems, developmental stages and life cycle.
Taenia: Structure of body wall, excretory and nervous systems, reproduction and developmental stages in life cycle.

Unit 3: *Nereis:* Parapodial locomotion, digestive, blood vascular, excretory, nervous and

reproductive systems, development and metamorphosis.

Hirudinaria: Digestive, haemocoelomic, excretory, nervous and reproductive systems, sense organs.

Unit 4: *Palaemon:* Appendages, Digestive, respiratory, blood – vascular, excretory, nervous, sense organs and reproductive systems.
Pila: Digestive, respiratory, blood vascular, nervous and reproductive systems, sense organs

Unit 5: *Lamellidens*: Digestive, respiratory, blood–vascular, excretory and nervous systems, sense organs, reproduction and development.
Asterias: Water – vascular system, digestive, circulating and nervous systems, sense organs, reproduction, life history and regeneration.

PRACTICALS
1. Dissection/demonstration of dissection [Major]:

    Palaemon: Study of appendages, general anatomy, digestive and nervous systems *Pila*: General anatomy and nervous system
    Lamellidens / Unio: General anatomy and nervous system
2. Permanent preparations / Minor dissections of the following: Protozoa: *Paramecium*

    Porifera: Sponge spicules, fibres and gemmules Coelenterata: *Obelia* colony, *Obelia* medusa Annelida: *Nereis* parapodia
    Arthropoda: *Palaemon*: Statocyst and hastate plate along with comb plates, *Cyclops* and *Daphnia*
    Mollusca: *Pila*: Gill lamella, radula and L. S. Osphradium, *Lamellidens*: Gill-lamella
3. Identification, systematic position up to order and general study of the following animal forms, microscopic slides / museum specimens:

    Protozoa: *Amoeba, Entamoeba, Euglena, Noctiluca, Trypanosoma, Trichomonas, Foraminifera* (Oozes)*, Opalina, Balantidium, Nyctotherus, Paramecium, Paramecium* binary fission and conjugation and, *Vorticella* [Whole mounts].
    Porifera: *Leucosolenia, Grantia, Scypha, Hyalonema, Euplectella, Spongilla* and *Euspongia*
    Coelenterata: *Obelia* (colony and medusa), *Physalia, Porpita, Aurelia, Rhizostoma, Alcyonium, Corallium, Gorgonia, Tubipora, Pennatulla* and *Madrepora*
    Ctenophora: *Beroe*
    Platyhelminthes: *Dugesia, Fasciola* and *Taenia*
    Nematoda: *Ascaris, Ancylostoma, Dracunculus, Wuchereria, Trichinella, Schistosoma* and *Enterobius*
    Annelida: *Nereis*, Phase Heteronereis, *Aphrodite, Arenicola, Pheretima, Pontobdella, Branchellion* and *Hirudinaria*
    Onychophora: *Peripatus*
    Arthropoda : *Limulus, Araneus, Palamnaeus, Apus, Lepas, Balanus, Sacculina, Palaemon, Lobster, Eupagurus, Carcinus, Lepisma, Odontotermes, Pediculus, Schistocerca, Papilio, Bombyx, Xenopsylla, Apis, Julus* and *Scolopendra*
    Mollusca: *Chiton, Dentalium, Patella, Pila, Turbinella, Aplysia,* Slug*,* Snail*, Mytilus,*

Ostrea (pearl oyster)*, Lamellidens, Teredo, Nautilus, Sepia, Octopus*
Enchinodermata: *Pentaceros, Asterias, Ophiothrix, Echinus, Holothuria* and *Antedon*

4. Study of sections, developmental stages and isolated structures from microscopic slides
    Porifera: L. S. and T. S. of *Scypha / Grantia*
    Coelenterata: *Hydra,* Sections of *Hydra,* Developmental stages of *Aurelia*
    Platyhelminthes: Transverse sections of *Dugesia, Fasciola* and *Taenia*, mature and gravid proglottids of *Taenia*, developmental stages of *Fasciola* and *Taenia*
    Annelida: Transverse sections of *Nereis* and *Hirudinaria*, Trochophore larva of Nereis, arapodium of *Nereis* and *Heteronereis.*
    Arthropoda: Crustacean larvae (*Nauplius, Zoea, Megalopa* and *Mysis*), mosquito larva & pupa. Mollusca: Transverse sections of *Lamellidens* and Glochidium larva
    Echinodermata: Pedicellariae of Star fish
    Each regular student is required to keep a record of practical work done by him/her duly checked by the teachers which will be submitted at the time of practical examinations.

Maximum Marks: 50   Minimum Pass Marks: 20

Each regular student is required to keep a record of practical work done by him/her duly checked by the teachers which will be submitted at the time of practical examinations.
Distribution of Marks:

	Regular	Ex.
Dissection/ diagrammatic presentation of dissection [Major]	12	12
Permanent preparation / Minor Dissection/ diagrammatic presentation of dissection (one)	06	08
Spots (five)	15	15
Viva-voce	07	15
	40	50
Internal assessment	10	-
Total	50	50

Recommended Books (All latest editions)
1. Prasad, Beni: *Pila*, Lucknow Publishing House, Lucknow.
2. Bhatia, M. L.: *Hirudinaria*, Lucknow Publishing House, Lucknow.
3. De Robertis, E. D. P. and De Robertis, E. M. F.: *Cell and Molecular Biology*, Halt Saunder,Tokyo, Japan.
4. Gardner, E. J.: *Principles of Genetics*, John Wiley & Sons, New York.
5. Kotpal, R. L. :*Invertebrates*, Rastogi Publications, Meerut.
6. Nigam, H. C. :*A University Course in Invertebrate Zoology*, Vol. I, Mc Milan, London.
7. Prasad, S. N. :*Text Book of Invertebrate Zoology*, KitabMahal, Allahabad.
8. Patwardhan, S. S. :*Palaemon*, Lucknow Publishing House, Lucknow.
9. Reese, A. M. :*Outlines of Economic Zoology*, Blackiston Co., Philadelphia, U.S.A.
10. VishwaNath :*A Text Book of Zoology*, Vol. I, Invertebrate, S. Chand & Co., New Delhi.
11. Rastogi, Veerbala :*Invertebrate Zoology*, KedarNath Ram Nath, Delhi.
12. Jordan, E. L. and P. S. Verma: *Invertebrate Zoology*, S. Chand & Co. Ltd., Ram Nagar, New Delhi.

Evaluation Plan for B.Sc.B.Ed I year's B.Ed. Papers

S.N	Paper	Name of the Paper	External	Internal	Total
1	First	Childhood and Growing up	70	30	100
2	Second	Basics in Education & Communication	70	30	100
3	Third	Language Across the Curriculum	70	30	100
4	Fourth	Conservation& Environmental Regeneration (EPC)	00	50	50
	Grand Total				**350**

TEACHING SCHEME & CONTACT HOURS

Paper	Contact Hours Per Week	Marks Theory	Sessionals	Duration of Exam
Paper I	**4.5hrs (45 minutes 6 periods)**	**70**	**30**	**3 hrs.**
Paper II	**4.5hrs (45 minutes 6 periods)**	**70**	**30**	**3 hrs.**
Paper III	**4.5hrs (45 minutes 6 periods)**	**70**	**30**	**3 hrs.**
Paper IV	**2.15 hrs (45 minutes 3 periods)**		**50**	

The internal assessment criteria in B.Sc.B.Ed I year's B.Ed. Papers will be as follows-

S.N	Name of the paper	Summative Assessment I(10Marks)	Summative Assessment II(10Marks)	Continuous/ formative Assessment (Activity / Practicum/ Field work)
1	Childhood and Growing up	10	10	Participation(5Marks) Documentation (5Marks)
2	Basics in Education & Communication	10	10	Participation(5Marks) Documentation (5Marks)
3	Language Across the Curriculum	10	10	Participation(5Marks) Documentation (5Marks)
4	Conservation & Environmental Regeneration(EPC)	10	10	Participation(15Marks) Documentation (15Marks)

NOTE-

Internal weight-age of 30 Marks will be divided as under:
1. Summative Tests: 20 Marks

(There shall be two tests its marks shall be consider for internal assessment record)
2. Candidates will conduct/prepare a report of 2 activities in each paper carrying 5 marks for activities & 5 marks for their documentation.
    Participation: (5 Marks) 2.5+2.5
    Documentation: (5 Marks) 2.5+2.5

3. For IV Paper i.e. Conservation & Environmental Regeneration(EPC) 50 marks of Internal Assessment will be divided as under-
    20 Marks Two Summative Tests
    15 Marks 3X5=15 (Five Activities, Practicum/Field work)
    15 Marks 3X5=15 (Documentation of each Activity, Practicum/Field work)
   Total = 20+ 30= 50 Marks

Duration: 3 Hrs.
Max Marks: 70

Objectives:
The student teacher will be able to:
- Understand children of different ages by interacting and observing them in diverse social, economic and cultural context rather than through an exclusive focus on psychological theories of child development.
- The study of childhood, child development and adolescence.
- Understand learning as divergent process.
- Make aware about the importance of healthy liking and preventing disease.
- Introduce psychological trials of learners.
- Develop health awareness among prospective teachers.
- Understand the role of the family and the school in the child's development.

COURSE CONTENT

UNIT – I: Childhood and child Development
1. Childhood: Meaning, concept and characteristics.
2. Development of the child with reference to diverse social, economic and cultural background.
3. Physical, social, emotional& intellectual development of child.
4. Development of concept formation, logical reasoning, problem-solving, creative thinking & language development. (Piaget's Contribution)
5. Effects of family, schools, neighbourhood and community on development of a child.

UNIT – II: Adolescent Development
1. Adolescent: Meaning, Concept & Characteristics
2. Cognitive, Physical, Social, Emotional and moral Development patterns and characteristics of adolescent learner.
3. Adolescent Personality: Problems & Remedies: Fantasising, Hero-worship, Idealism Daydreaming, Adventurism, Drug addiction & smoking, inquisitiveness towards opposite sex, showing off, Social-media addiction.
4. Impact of urbanization, economic change, Social Taboos on adolescent.

UNIT – III: Intelligence & Creativity
1. Intelligence: Concept & Measurement
2. Creativity : Concept & Measurement

UNIT – IV Physical & Mental Hygiene:
1. Mental health & Hygiene: Meaning, Concept and Factors affecting mental Health & Hygiene.
2. Development of Good mental Health, characteristics of mentally healthy teacher, to improve mental health of teachers.

3. Personal and environmental hygiene, Family and school health/prevention of accident, Health information, disease prevention and health information.

UNIT – V Personality

Concept (Indian and Western), Measurement, factors affecting personality Development.

PRACTICUM/FIELD WORK (Any two from the following) :
1. Assign a task to a student to speak 10 sentences about himself/herself and analyse them linguistically & psychologically
2. Organise a debate on the issue 'Social Media as a time-thief of the youth. Note down the main point spoken for and against.
3. Administration and Interpretation of any one psychological test -
   (a) Intelligence (b) Creativity (c) Personality
4. Examine the physical hygiene of a school or any social place in order to make critical appreciation.
5. Prepare a report on some existing social taboos and interpret it logically and scientifically.

References

- Dweck, C. (2006). Mindset: The new psychology of success. Random House LLC.
- Mangal Dr. S.K, Mangal Shubhra, 2005, Child Development, Arya Book Depot New Delhi.
- Mathur, Dr.S.S. 2007-08, Development of learner and Teaching learning process, Agrawal publication, Agra.
- Mishra. R.C. 2010, child psychology. A.P.H publishing corporation, New Delhi.
- Paree Mathureshwar, 2002, Child Development and Family Relationship, Research Publication, Jaipur.
- Piaget, J. (1997) development and learning. in M gauvarin& M. Cole (Eds.) readings on the development of children. New York. WH freeman & company
- Plato (2009) Reason and persuasion three dialogues in J. Holbo (Ed) meno: reason, persuasion and virtue. Person.
- Saraswathi T. S. (1999) adult-child continuity in india: in adolescence a myth or an emerging relity? In T.S. Saraswathi 9Ed) culture, socialization and human development : theory research and applications in India. New Delhi Sage.
- Sharma, R.K, Sharma, H.S, Tiwari, Aryana, 2006, Psychological Foundation of Child development, Rodha Prakashan Mandir, Agra.
- Shrivashra D.N, Verma Preeti 2007, Child Psychology: Child Development Vinod Pustak Mandir, Agra.
- Shrivasha. D.N. Verma, Verma, Dr.Preeti 2010, Modern Experimental Psychology and Teshing, Shri Vinod Pustak Mandir, Agra.
- Singh. Dr. D.P, talang. Amritanshy, prakashved. 2002 psycho- social basis of learning and development, research publication, Jaipur.

Duration: 3 Hrs.
Max Marks: 70

Objectives:
The student teacher will be able:
- To understand the meaning, nature and process of education.
- To clarify how educational determinants determine the individual's personality in a typical shape
- To understand how ways of educating people changed with the process of time.
- To equip a teacher with different skills needed for providing guidance and counselling
- To understand the concept & importance of guidance & counselling services.
- To understand the different values & ways to inculcate them
- To develop oral, written and non verbal communication skills

COURSE CONTENT

Unit 1: <u>Education, Nature & Purpose</u>
1. Education: Meaning, Nature and purpose of Education according to
        Vivekanand,Tagore,Gandhi,Aurobindo,Rousseau & John Dewey.
2. Important National documents:Kothari Commission,National Education Policy 1986, Revised National Policy 1992 and NCF 2005.
3. Education as a Social Process.

Unit 2: <u>Evolution and Management of Education</u>
1. Ancient Indian Education System: Vedic Era, Buddhist Era, Muslim Era & British Era   - An Overview with specific reference to Teacher, Student, Methods and Contents.
2. Educational Management: Meaning, Concept, Principles.
3. Managerial Role of the Head of Institution: - Meaning, Importance and qualities, Managerial activities – Planning, Decision-making, Co-ordination, Supervision and Financing in the schools.

Unit 3: <u>Educational Guidance & Counselling</u>.
1. Meaning, Concept, Need and Importance of Guidance & counselling in Educational Institutions.
2. Group and individual techniques of Guidance.
3. Need of Guidance & counselling for children with special needs.
4. Minimum essential Guidance programme for an Indian Secondary Schools.

Unit 4: <u>Values Education and Peace Education</u>
1. Values: Meaning, Types: Aesthetic, Spiritual, Universal, Moral and ethical etc. Role of Education in Transformation of Values in Society.
2. Value Education: Recommendations of Committees, Commissions and Policy Directives.

3. Major issues related to value Education, Methods of Value Orientation and Evaluation of value learning.

4. Peace Education – Meaning , Concept and need.

  (a)Issues of National and International conflicts, social injustice, Communal conflict.

  (b)Individual alienation: A Critical understanding.

  (c) Role of School, Social organisations (UNESCO) and Individuals in promoting peace.

Unit 5: <u>Communication Skills for the Teachers.</u>

1.Communication: Meaning, Concept, Elements and Process, 7 C's of Communication, Audio-Visual-Communication. Importance of Non verbal Communication in Teaching.

2.Listening & Speaking Skills, Barriers to Listening & speaking, Effective Presentation.

3.Written Communication for Teachers: Circulars, Notices, Orders, Report, and Minutes.

Practicum/Field Work (Any two from the following)

1. Interview a less educated or uneducated person about a social issue & conclude the findings in present context.
2. "Are Modern Educational ways Effective in comparison to traditional ways of teaching" Organise a debate for or against and report the outcomes.
3. How students choose their career. Discuss with the Headmaster/Principal, Parents/Students & prepare a report on it.
4. Write a small reflective note on how you found yourself under a value conflict situation in recent past

<p align="center">Or</p>

Analyse the contribution of any National or International personality in establishing peace.

5. Speak some fifty words & tell students to recall them back and note down who counts maximum.

<p align="center">Or</p>

Draft two notices for the conduction of some activity in school.

References

- Agrawal, J C: Educational & Vocational Guidance Doaba, Delhi.
- Chahel S K (1994), Environment & the Morality: Towards a new paradigm
- Elizabeth B. Hurlock, Personality Development, Tata McGraw Hill Edition 1976, New Delhi
- Gandhi K L (2000), Naitik Moolya: Sankaleen Parivesh Mein, Frank brothers, Delhi
- Giri A. P (1991), School Broadcast programs: Problems & Prospects, Deep & Deep Publications New Delhi.
- Pal Rajendra, Korlahalli J S, (2005), Essentials of Business Communication, Sultan Chand & Sons, New Delhi
- Sheshadri C, M.A Khader and G L Adhya(eds) (1992), Education in values: A Source book, NCERT, New Delhi
- Verma R S and Upadhyaya: Shaikshik avam Vyavsayik Nirdeshan, Vinod Pustak Mandir, Agra.

B.Sc. B.Ed. I Year 2021-22
Paper-III
Language Across The Curriculum

Duration: 3 Hrs.
Max Marks: 70

Objectives
The student teacher will be able to:
- Understand the language background of students as the first or second language users.
- Create sensitivity to the language diversity that exists in the classroom.
- Understand the nature of classroom discourse and develop strategies for using oral language in the classroom.
- Understand the nature of reading comprehension in the content area & writing in specific content areas.
- Understand interplay of language and society.
- Understand function of language and how to use it as a tool.
- Understand language and speech disorder and make remedial measures, too.

COURSE CONTENT

Unit-I Language and Society:-
1. Rule governed system: Meaning, Concept and use in language.
2. Relationship of language and society: Identification, power and discrimination.
3. Nature of multilingualism: Managing multilingualism in classroom
4. Constitutional status of languages: Hindi, English, Regional languages

Unit- II Language development:-
1. Theories of language development (Vyogotsky, chomskey, Panini, Kamta Prasad) and its implementation in teaching.
2. Construction of Proverbs and Idioms, Diversity of language and religion.
3. Speech defects: - lisping, slurring and stammering, role of teacher in its resolution.
4. Physical, Environmental, Social and Psychological barriers to language learning.

Unit-III Language acquisition:-
1. Understanding Hindi alphabets & it's logical & simple classification
2. Language acquisition and cognitive development, Learning languages with fun
3. Culture acquisition through language.

Unit-IV Classroom and Language:-
1. Vocabulary building strategies in classroom.
2. Tools for learning: Dictionary, Discussion and Word puzzles .
3. Courteous expression: In written and spoken form, Professional implications for a teacher.
   4. Function of language: In the classroom and outside the classroom.
5. Role of literature in language learning and understanding.

Unit-V LSWR (Listening, Speaking, Reading, Writing) as basic skills for languages.

1. The development of reading & writing skills of secondary students through activities.

2. Nature of expository texts Vs narrative texts, transactional Vs reflective texts.

3. Effective ways of speaking for Effective Listening: Pronunciation, Enunciation, pause, intonation, articulation, Pitch Raising & Dropping.

4. Importance of 3 V's (Vocal, Visual & Verbal) in language communication

Practicum/Field Work (Any two from the following)

1. Draft a report on the efforts put in by Rajasthani people to give Rajasthani Language a status of constitutionally scheduled/recognised language.
2. Diagnose speech defects of primary level student and make a remedial strategy.
3. Prepare a list of atleast 10 proverbs of Rajasthani Language and interpret their cultural significance.
4. Narrate your First experience of First Day for internship programme.
5. Collect a literary style poem of any language and critically analyse it .

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Max Marks: 50

Objectives:
The student teacher will be able:
- To understand philosophical and epistemological basis of EVS as a composite area of study that draws upon the science, social science and environmental education.
- To develop the ability to plan comprehensively and analyse & prepare projects on environmental issues.
- To Understand the issues of conservation and environmental regeneration
- To analyze and understand environmental concerns through the process of inquiry.
- To develop in the pupil teachers a sense of awareness about the environment hazards and its causes and remedies.

COURSE CONTENT

Unit – I: <u>Introduction to Environmental Studies</u>
1. Natural Environment: Meaning and Concept.
2. Environment and It's Components : Biotic and Abiotic and inter-dependency.
3. Man & Environment: A symbiotic dependences.
4. Environmental Education : Meaning, Historical background, Aims, Nature, and Scope.

UNIT -II : <u>Environmental Pollution</u>
1. Environmental Pollution :
a.Meaning and Main Types – Air,Water,Noise, Soil and Solid Waste Pollution.
b. Radio Active Pollution.
c. Green House Effect.
d. Ozone Layer Depletion.
e. Acid Rain.

UNIT – III: <u>Environmental Conservation & Regeneration :-</u>
1. Biodiversity :- Meaning, concept and types.
2. Need and importance of biodiversity at global/national/local level.
3. Environmental Conservation And Regeneration: Meaning, concept, scope and need.
4. Biodiversity conservation: need and methods.
5. Role of individual and society in conservation of natural resources: water, energy and food.

Unit-IV: <u>Environmental Management and Sustainable Development:-</u>
1. Environmental Management: Meaning, concept,need and importance.
2. Nuclear, Biomedical and Solid Waste Management.
3. Sustainable Development: Meaning, concept, need and importance.
4. Measures for Sustainable Development : A fforestation,Changing Patterns of energy and water consumption,Organic farming.

Unit-V: <u>Environmental Awareness Through Education & Media:-</u>
1. Role Of Teacher in creating environmental awareness among students.
2. Curriculum of Environmental Education at Primary, Secondary and Higher Education stage.
3. Methods and approaches : Seminar, Workshop, Problem-Solving, Field Surveys, Project and Exhibition.
4. Role of media and innovative practices in creating environmental awareness.
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Practicum/Activity work (All activities are Compulsory):-
1. Conduct a campaigning programme for plantation of Tulsi, Neem etc.
2. Celebrateimportant relevant days related to environmental conservation (such as earth day, world environmental days etc) in school or out of school with the help of students and make a systematic report on entire activities or work.
<div align="center">Or</div>

    Draft a report after analysing the scientific base of Environment related days of traditional Indian culture and present this report in class.(BasantPanchmi, HariyaliAmavasya etc.)
3. Conduct an activity in school and ask students to get opinion of their grandparents about changing life style and their merits and demerits and collect their ideas on domestic products which can be helpful in healthy life style. The pupil teacher will compile their experiences and draft a report to present it in class.
4. Organize a planned Visit to a hospital to study biomedical wasteproduced and its disposal , after visiting it. Present   your report in class.
5. Analyse the direct or indirect message of TraditionalCulture/folk songs of your area for   social or natural environment enhancement.

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