Government PG College for Women Rohtak

Department Of Botany

Syllabi & Field Work Report (2021-22)

1. Copy of syllabi of B.Sc. I, II, III Botany. (Annex. 1,2,3)
2. Programme Name and code (Annex. 4)
3. Practicals in BSc I (Sem1,2), BSc II (Sem3,4) and BSc III (Sem5,6) include field work and project report (Annex. 5)
4. Course Codes (Annex. 4)
5. No of students year wise undertaking field work and project report (Annex. 6)
6. Field Work Report (Annex. 6)
7. Sample Pictures (Annex.7)

Dr Veena Sachdeva
Associate Professor in Botanty

SCHEME OF EXAMINATION FOR B.Sc. (BOTANY) SEMESTER SYSTEM

w.e.f. Session 2021-22

Scheme of B.Sc. 1st Year

Semester I					
Sr. No.	**Paper code**	**Nomenclature**	**Marks+IA**	**Periods / week**	**Exam. Duration**
1.	BOT.1.1	Diversity of Microbes	40+10	4	3 hrs.
2.	BOT 1.2	Cell Biology	40+10	4	3 hrs.
3.	P-101	Practical (1.1& 1.2)	50	8	3hrs
Semester II					
4.	BOT 2.1	Diversity of Archegoniates	40+10	4	3 hrs.
5.	BOT 2.2	Genetics	40+10	4	3 hrs.
6.	P-102	Practical (2.1& 2.2)	50	8	3 hrs
Total Semester I & II			**300**		

Scheme of B.Sc. II (2021-22)

Semester III					
Sr. No.	**Paper code**	**Nomenclature**	**Marks+IA**	**Periods / week**	**Exam. Duration**
1.	BOT 3.1	Biology and Diversity of Seed Plants-I	40+10	4	3 hrs.
2.	BOT 3.2	Plant Anatomy	40+10	4	3 hrs.
3.	P-201	Practical (3.1& 3.2)	50	8	3 hrs
Semester IV					
4.	BOT 4.1	Biology and Diversity of Seed Plants II	40+10	4	3 hrs.
5.	BOT 4.2	Plant Embryology	40+10	4	3 hrs.
6.	P-202	Practical (4.1& 4.2)	50	8	3hrs
Total Semester III & IV			**300**		

Scheme of B.Sc. III (2021-22)

Semester V					
Sr. No.	**Paper code**	**Nomenclature**	**Marks+IA**	**Periods / week**	**Exam. Duration**
1.	BOT 5.1	Plant Physiology	40+10	4	3 hrs.
2.	BOT 5.2	Ecology	40+10	4	3 hrs.
3.	P-301	Practical (5.1& 5.2)	50	8	3hrs
Semester VI					
4.	BOT 6.1	Biochemistry & Plant Biotechnology	40+10	4	3 hrs.
5.	BOT 6.2	Economic Botany	40+10	4	3 hrs.
6.	P-302	Practical (6.1& 6.2)	50	8	3hrs
Total Semester V & VI			**300**		
Grand Total Semester I – VI			**900**		

Note: -

- There will be an internal assessment of 20%, in each theory paper.
- I Period =45 minutes

Practical examination will be held conducted at the end of each semester.

B.Sc. Botany SEMESTER-I

PAPER CODE: BOT. 1.1 PAPER –I

DIVERSITY OF MICROBES

Internal Assessment-10 Max. Marks – 40

Time- 3 Hours

Note: Attempt five questions in all, selecting one question from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bacteria: Structure, nutrition, reproduction and economic importance **Cyanobacteria**: General characters; life-history of *Nostoc*

Algae: General characters, classification (upto classes) and economic importance; General account of algal blooms

UNIT II

Important features and life-history (excluding development) of *Volvox*, *Oedogonium* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae)

UNIT-III

Viruses: General account of Viruses including structure of TMV and Bacteriophages

Fungi: General characters, classification (upto classes) and economic importance; General account of Lichens

UNIT- IV

Important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor* (Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia*, *Agaricus* (Basidiomycotina), *Colletotrichum* (Deuteromycotina)

B.Sc. Botany SEMESTER-I

PAPER CODE: BOT. 1.2 PAPER –II CELL

BIOLOGY

Internal Assessment-10 Max. Marks - 40

Time- 3 Hours

Note: Attempt five questions in all, selecting one question from each unit.

Question no. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

The Cell Envelopes: Structure and functions of Cell Wall, Plasma Membrane, Golgi Apparatus, Endoplasmic Reticulum, Lysosomes, Peroxisomes and Vacuoles

UNIT II

Ultra-structure and function: Chloroplast, Mitochondria, Nucleus and Nucleolus

Chromosome: Morphology, ultra-structure - kinetochore, centromere and telomere

UNIT-III

Cell Cycle: General account

Cell Division: Mitosis and Meiosis - Stages and Significance

UNIT - IV

Chromosomal aberrations: Structural and Numerical - deletions, duplications, translocations, inversions, aneuploidy, polyploidy

Sex chromosomes and Sex determination in Plants

PRACTICALS

B.Sc. 1st Botany (First Semester)

Diversity of Microbes and Cell Biology (Code: P 101)

Max. Marks: 50 Time allotted: 3 Hours

1. Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given two specimens A, B & C (15)

2 Prepare smear/squash and find out two different stages of mitosis/meiosis. Identify and show it to the examiners and also give characters of identification. (12)

3 Identify giving two important characters of identification of the given spots 1, 2, 3,4
(one slide/ material from virus, bacteria, fungi, lichen). (8)

4. Field visit and collection records (5)

5. Practical records (5)

6. Viva-voce (5)

SUGGESTED READINGS

Smith, G.M. 1971. Cryptogamic Botany. Vol.I. Algae & Fungi. Tata McGraw Hill Publishing Co., New Delhi.

Sharma, P.D. 1991. The Fungi. Rastogi & Co., Meerut.

Dube, H.C. 1990. An Introduction to Fungi, Vikas Publishing House Pvt.Ltd., Delhi.

Clifton, A. 1958. Introduction to the Bacteria: McGraw Hill & Co., New York.

Alberts, B.Bray, D.Lewis, J., Raff, M.., Roberts, K. and Watson. I.D. 1999. Molecular Biology of Cell. Garland Publishing Co., Inc., New York, USA.

Atherly, A.G. Girton, J.R. and McDonald, J.F. 1999. The Science of Genetics, Saunders College Publising , Fort Worth, USA.

Gupta, P.K. 1999. A text book of Cell and Molelcular Biology. Rastogi Publications, Meerut, India.

B.Sc. Botany Semester-II

PAPER CODE: BOT. 2.1

PAPER –I DIVERSITY OF ARCHEGONIATES

Internal Assessment-10
Max. Marks – 40
Time- 3 Hours

Note: Attempt five questions in all, selecting one question from each unit. Question No. 1 is compulsory (short answer type).Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bryophyta- General characters, classification (upto classes), alternation of generations, evolution of sporophytes and economic importance

UNIT -II

Bryophyta: Structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida) and *Funaria* (Bryopsida)

UNIT-III

Pteridophyta- General characters, classification (upto classes), alternation of generations, heterospory, apospory, apogamy and economic importance; General account of stellar evolution

UNIT IV

Pteridophyta: Structure and reproduction (excluding development) of *Rhynia* (Psilopsida), *Selaginella* (Lycopsida), *Equisetum* (Sphenopsida) and *Pteris* (Pteropsida)

B.Sc. Botany SEMESTER-II

PAPER CODE: BOT. 2.2

PAPER –II GENETICS

Internal Assessment-10
Max. Marks – 40
Time- 3 Hours

Note: Attempt five questions in all, selecting one question from each unit.

Question no. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Genetic Material: DNA - the genetic material, DNA structure and replication, DNA-Protein interaction, The Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.

UNIT - II

Genetic Inheritance: Mendelism: Laws of Segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions.

UNIT-III

Extra-nuclear Inheritance: Presence and function of Mitochondrial and Plastid DNA; Plasmids.

Genetic Variations: Mutations - spontaneous and induced; transposable genetic elements; DNA damage and repair.

UNIT - IV

Gene Expression: Modern concept of gene; RNA; Ribosomes; Transfer of genetic information - transcription and translation; Structure of proteins; Regulation of gene expression in prokaryotes and eukaryotes

PRACTICALS

B.Sc. 1st Botany (Second Semester)

Diversity of Archegoniates and Genetics

(Code: P-201)

Max Marks: 50 **Time: 3hrs**

1. Identify, classify and write short morphological notes giving well labelled diagrams on the given two specimens from Bryophytes and Pteridophytes. (12)
2. One numerical regarding genetics (Mendelian inheritance or gene interaction) as per syllabus. (12)
3. Identify giving two important characters of identification of the given spots 1, 2, 3,4 (8)
4. Field Visit and collection records (8)
5. Practical records (5)
6. Viva-voce (5)

SUGGESTED READINGS:

Atherly, A.g. Girton, J.R. and McDonald, J.F. 1999. The Science of Genetics, Saunders College Publishing, Fort Worth, USA.

Gupta, P.K. 1999. A text book of Cell and Molecular Biology. Rastogi Publications, Meerut, India

Kleinsmith, L.J. and Kish, V.M. 1995. Principles of Cell and Molelcular Biology (2nd edition). Harper Collins College Publishers, New York, USA.

Lodish, H., Berk, A., Zipursky, S.L., Matudaria, P., Baltimoe, D. and Darnell, J. 2000. Molecular, Cell Biology, W.H. Freeman and Co., New York, USA.

Russel, P.J. 1998. Genetics, The Benjamin/Cummings Publishing Co. Inc., USA.

Snustad, D.P. and Simmons, M.J. 2000. Principles of Genetics. John Wiley and Sons, Inc. USA.

Smith, G.M. 1971. Cryptogamic Botany, Vol.II, Bryophytes & Pteridophytes. Tata McGraw Hill Publishing Co., New Delhi.

Sharma, O.P. 1992. Text Book of Thallophytes, McGraw Hill Publishing Co.

Sharma, O.P. 1990. Text Book of Pteridophyta, Mc Millan India Ltd.

Puri, P., 1980, Bryophyta, Atma Ram & Sons, Delhi.

Russel, P.J. 1998. Genetics, The Benjamin/Cummings Publishing Co. Inc., USA.

Snustad, D.P. and Simmons, M.J. 2000. Principles of Genetics. John Wiley and Sons, Inc. USA.

B.Sc. Botany
SEMESTER-
III
PAPER CODE: BOT. 3.1

Paper -I BIOLOGY AND DIVERSITY OF SEED PLANTS –I

Internal Assessment-10
Max. Marks - 40
Time – 3 hrs.

Note : Attempt five questions in all, selecting one question from each unit.

Question No.1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

General characters, origin and evolution ofGymnosperms
Geological Time Table; Evolution of Seed Habit.
Pilger and Melchior's (1954) system of classification of Gymnosperms.

UNIT-II

Palaeobotany- Fossils and Fossilization (Process involved, types of fossils and importance of fossils);
Reconstruction of the following fossil plants:

Lyginopteris Williamsonia

Cycadeoidea (= ennettites)

UNIT-III

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of following plants:

Cycas

Pinus

UNIT-IV

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of *Ephedra*
Economic importance of Gymnosperms
General characters, origin and evolution of Angiosperms

B.Sc. Botany
SEMESTER-
III

PAPER CODE: BOT. 3.2 PAPER-II

PLANT ANATOMY

Internal Assessment-10

Max. Marks - 40

Time – 3 hrs.

Note : Attempt five questions in all, selecting one question from each unit.

Question No.1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Tissues - meristematic and permanent (simple, complex and secretory) Tissue systems (Epidermal, ground and vascular)
The Shoot system - shoot apical meristem and its histological organizations.

UNIT-II

Cambium - structure and functions.
Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm;
Anomalous secondary growth (*Dracaena, Boerhaavia* and *Achyranthes*)

UNIT-III

Leaf: Types of leaves (simple and compound); phyllotaxy. Epidermis-uniseriate and ultiseriate, epidermal appendages and their morphological types.
Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves, leaf abscission, Stomatal apparatus and their morphological types

UNIT-IV

Root system: Root apical meristem; histological organization
Secondary growth in dicot root.
Structural modifications in roots: Storage (*Beta*), Respiratory (*Rhizophora*), Epiphytic (*Vanda*).

PRACTICALS

B.Sc. II[nd] Botany (Third Semester)

Biology & Diversity of Seed Plants-I and Plant Anatomy(Code: P 301)

Max. Marks: 50 **Time : 3Hours**

1. Cut the section of given material A and prepare a double-stained permanent mount of the given material. Identify giving reasons and show it to the examiner. (10)

2 Identify, classify and write morphological notes on the given material/specimens B & C from Gymnosperms. (10)

3 Identify, giving the important characters of identification of the spots/specimen 1 and 2 from Gymnosperms and 3 and 4 from angiosperms (10)

4 Filed visit and collection records. (10)

5 Note-book (5)

6 Viva-voce (5)

Suggested Readings

Bhatnagar, S. and Moitra, A. 1996. Gymnosperms. New Age International Limited, New Delhi.

Davis, P.H. and Heywood, V.H. 1963. Principles of Angiosperms Taxonomy, Oliver and Boyd. London.

Gifford, E.M. and Foster, A.S. 1988. Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.

Heywood, V.H. and Moore, D.M. (eds) 1984. Current concepts in Plant Taxonomy. Academic Press, London.

Jeffrey, C. 1982. An introduction to Plant Taxonomy. Cambridge University Press, Cambridge, London.

Jones, S.B. , Jr. Luchsinger, A.E. 1986. Plants Systematics 2nd edition). McGraw Hill Book Co. New York.

Maheshwari, J.K. 1963. Flora of Delhi, CSIR, New Delhi.

Radford, A.E. 1986. Fundamentals of Plant Systamtics. Harper and Row, New York.

Singh, G. 1999. Plant Systematics: Theory and Practical. Oxford and IBH Pvt. Ltd., New Delhi.

Sporn, K.R. 1965. The Morphology of Gymnsperms. Hutchinson & Co. Ltd., London.

Stace, C.A. 1989. Plant Taxonomy and Biosystematics (2nd edition). Edward Arnold, London.

Steward, W.M. Paleobotany and the Evolution of Plants. Cambridge University Press, Cambridge.

B.Sc. Botany SEMESTER- IV

PAPER CODE: BOT. 4.1

PAPER-I BIOLOGY AND DIVERSITY OF SEED PLANTS-II

Internal Assessment-10 Max. Marks – 40
Time – 3 hrs

Note: Attempt five questions in all, selecting one question from each unit. Question No.1 is compulsory (short answer type).Nine questions are to be set spread over the entire syllabus. All questions carry equal marks

UNIT-I

Taxonomy and Systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny), Role of chemotaxonomy, cytotaxonomy and taximetrics in relation to taxonomy, Botanical Nomenclature, principles and rules, principle of priority, Keys to identification of plants.

UNIT-II

Type concept, taxonomic ranks, Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl, Floral Terms and Types of Inflorescence

UNIT-III

Diversity of Flowering Plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Fabaceae, Cucurbitaceae

UNIT-IV

Diversity of Flowering Plants: Diagnostic features and economic importance of the families: Apiaceae, Asclepiadaceae, Lamiaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae

B.Sc. Botany SEMESTER- IV

PAPER CODE: BOT. 4.2 PAPER-II

PLANT EMBRYOLOGY

Internal Assessment- 10 Max. Marks - 40

Time – 3 hrs.

Note : Attempt five questions in all, selecting two questions from each unit. Question No.1 is compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Flower-a modified shoot, Microsporangium, its wall and dehiscence mechanism.

Microsporogenesis, pollen grains and its structure (pollen wall).

UNIT -II

Pollen germination (microgametogenesis), Male gametophyte, Pollen-pistil interaction; self incompatibility, Pollination: types and agencies

UNIT-III

Structure of Megasporangium (ovule), its curvatures; Megasporogenesis and Megagametogenesis,Female gametophyte (mono, bi and tetrasporic), Double fertilization,Endosperm types and its biological importance.

UNIT-IV

Embryogenesis in Dicot and Monocot; Polyembryony, Structure of Dicot and Monocot seed, Fruit types; Dispersal mechanisms in fruits and seeds.

PRACTICALS

B.Sc. II[nd] Botany (Fourth Semester)

Max. Marks: 50 Time: 3Hours

1 Describe/compare the given flowers A and B in semi-technical language giving V.S. of flowers, T.S. of ovaries, floral diagrams and Floral Formulae. Identify and assign them to their respective families giving reasons. (12)

2 Dissect out the globular/heart-shaped embryo from the given material. (10)

3 Identify, giving the important characters of identification of the spots 1, 2 and 3 from embryology (9)

4 Field visit and collection records. (9)

5 Practical records (5)

6 Viva-voce (5)

7 Suggested Readings

Bhojwani, S.S. and Bhatnagar, S.P. 2000. The Embryology of Angiosperms. 4th revised and enlarge edition. Vikas Publishing House, Delhi.

Cutter, E.G. 1969. Plant Anatomy Part-I, Cells and Tissues, Edward Arnold, London.

Cutter, E.G. 1971. Plant Anatomy: Experiment and Interpretation. Part-II Organs, Edward Arnold London.

Esau, K. 1977. Anatomy of Seed Plants, 2nd edition. John Wiley & Sons, New York.

Fageri, K and Van der Pijl 1979. The Principles of Pollination Ecology. Pergamon Press, Oxford.

Fahn, A. 1974. Plant Anatomy, 2nd Edition. Pergamon Press, Oxford.

Hartmann, H.T. and Kestler, D.E. 1976. Plant Propagation; Principles and Practices. 3rd edition. Prentice Hall of India Pvt. Ltd. New Delhi

King. J. 1997. Reaching for the Sun: How Plants Works. Cambridge University Press, Cambridge, U.K.

Mauseth, J.D. 1988. Plant Anatomy. The Benjamin/Cummings Publishing Company Inc. Menlo Park, California, USA.

Proctor, M and Yeo, P. 1973. The Pollination of Flowers. William Collins Sons, London.

Raven, P.H. Evert, R.F. and Eichhorn, S.E. 1999. Biology of Plants. 5th edition. W.R. Freeman and Co., Worth Publishers, New York.

Thomas, P. 2000. Trees: Their Natural History. Cambridge University Press, Cambridge.

B. Sc. III (Botany)

Syllabus PAPER CODE:

BOT. 5.1

SEMESTER-V

Paper – I Plant Physiology

Internal Assessment- 10 Max. Marks – 40
Time – 3 hrs.

Note: Five questions to be attempted in all, selecting one question from each unit. Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Plant-water relations: Importance of water to plant life; physical properties of water; imbibition, diffusion and osmosis; absorption and transport of water; transpiration; physiology of stomata.

Mineral nutrition: Essential macro and micro elements and their role; mineral uptake; deficiency symptoms.

UNIT -II

Transport of organic substances: Mechanism of phloem transport; source-sink relationship; factors affecting translocation.

Photosynthesis : significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photo-phosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration.

UNIT-III

Growth and development : Definitions; phases of growth and development; seed dormancy; plant movements; the concept of photoperiodism; physiology of flowering; florigen concept; physiology of senescence; fruit ripening;

UNIT -IV

Plant hormones- auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, mechanism of action; photo-morphogenesis;

Phytochromes and their discovery, physiological role and mechanism of action.

Suggseted Readings:

1. Dennis,D.T., Turpin, D.H., Lefebvre,D.D. and Layzell (eds.). 1997: Plant Metabolism (2nd Edition), Longman, Essex, England.
2. Galston, A.W. 1989: Life Processes in Plants, Scientific American Library, Springer-Verlag, New York, USA.
3. Hopkins, W.G., 1995: Introduction to Plant Physiology, John Wiley & Sons, Inc., New York, USA.
4. Mohr, H. and Schopfer, P. 1995: Plant Physiology. Springer-Verlag, Berlin Germany.

B. Sc. III (Botany) Syllabus SEMESTER-V

PAPER CODE: BOT. 5.2

Paper - II Ecology

Internal Assessment-10
Max. Marks – 40
Time – 3 hrs.

Note: Five questions to be attempted in all, selecting two questions from each unit. Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Introduction to Ecology: Definition; scope and importance; levels of organization . Environment: Introduction; environmental factors- climatic (water, humidity, wind, light, temperature), edaphic (soil profile, physico-chemical properties), topographic and biotic factors (species interaction).

UNIT-II

Adaptations of plants to water stress and salinity (morphological and anatomical features of hydrophytes, xerophytes and halophytes).

Population ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads.

UNIT-II

Community ecology: Concepts; characteristics (qualitative and quantitative analytical and synthetic); methods of analysis; ecological succession.

Ecosystem: Structure (components) and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow)

Biogeochemical cycles; Carbon, nitrogen, phosphorus and hydrological cycle.

UNIT-IV

Phyto-geography: Phyto- geographical regions of India; vegetation types of India (forests). Environmental pollution: Sources, types and control of air and water pollution.

Global change: Greenhouse effect and greenhouse gases; impacts of global warming; carbon trading; Ozone layer depletion; Biomagnification

Suggested Readings:

1. Odum, E.P. 1983: Basic Ecology, Saunders, Philadelphia.
2. Kormondy, E.J. 1996: Concepts of Ecology, Prantice-Hall of India Pvt. Ltd., New Delhi.
3. Mackenzie, A. et al. 1999: Instant Notes in Ecology, Viva Books Pvt. Ltd., New Delhi.

Semester V Practical

Plant Physiology and Ecology (P-501)

Max. Marks: 50 **Time: 3hrs.**

1. Devise an experiment to demonstrate the physiological process (As per list).Perform it and show it to the examiner.	12
2. Comment on physiological experiment (Specimen set up/ model/chart).	10
3. Ecological experiment/ecological specimen (As per list)	12
4. Note Book, Collection and field report	10
5. Viva-voce	6

B.Sc. Botany SEMESTER-VI

PAPER CODE: BOT. 6.1

Paper – I Biochemistry and PlantBiotechnology

Internal Assessment-10 Max.

Marks –40 Time – 3 hrs

Note: Five questions to be attempted in all, selecting two questions from each unit.

Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action.

UNIT-II

Respiration: ATP – the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemiosmotic theory); redox -potential; oxidative phosphorylation; pentose phosphate pathway.

UNIT-III

Lipid metabolism: Structure and functions of lipids; fatty acid biosynthesis; β-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

Nitrogen metabolism: Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation.

UNIT-IV

Genetic engineering and Biotechnology: Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of *Agrobacterium*; vectors for gene delivery and marker genes.

Suggested Readings:

1. Bhojwani, S.S. 1990: Plant Tissue Culture Applications and Limitations. Elsevier Science Publishers, New York, USA.
2. Lea, P.J. and Leegood, R.C. 1999:Plant Biochemistry and Molecular Biology, John Wiley & Sons, Chichester, England.
3. Old, R.W. and Primrose, S.B. 1989: Principles of Gene Manipulation, Blackwell Scientific Publications, Oxford, UK.
4. Raghavan, V. 1986: Embryogenesis in Angiosperms: A Developmental and Experimental Study, Cambridge University Press, New York, USA.

SEMESTER-VI PAPER CODE: BOT. 6.2

Paper – II Economic Botany

Internal Assessment-10

Max. Marks – 40 **Time – 3 hrs.**

Note: Five questions to be attempted in all, selecting two questions from each unit.

Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Vavilov's centres of origin of crop plants, Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following:

Food plants - cereals (rice, wheat and maize), pulses (gram, arhar and pea), vegetables (potato, tomatoand onion).

UNIT-II

Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following:

Fibers- cotton, jute and flax.

Oils- groundnut, mustard, sunflower and coconut.

UNIT-III

Morphological description, brief idea of cultivation and economic uses of the following:

Spices- coriander, ferula, ginger, turmeric, cloves.

Medicinal plants- *Cinchona, Rauwolfia, Atropa, Opium, Cannabis, Azadirachta, Withania*.

UNIT-IV

Botanical description, processing and uses of:

Beverages- tea and coffee;

Rubber - *Hevea*;

Sugar- sugarcane

General account and sources of timber; energy plantations and bio-fuels.

Semester VI

Practical

Semester V Practical

Plant Physiology and Ecology (P-501)

Max. Marks: 50 **Time: 3hrs.**

1. Devise an experiment to demonstrate the physiological process (As per list).Perform it and show it to the examiner.	12
2. Comment on physiological experiment (Specimen set up/ model/chart).	10
3. Ecological experiment/ecological specimen (As per list)	12
4. Note Book, Collection and field report	10
5. Viva-voce	6

Suggested Readings:

1. Kocchar, S.L. 1998: Economic Botany in Tropics, 2nd edition, MacMillan India Ltd., New Delhi.
2. Sambammurthy, A.V.S.S. And Subramanyam, N.S. 1989: A Textbook of Economic Botany, Wiley Eastern Ltd., New Delhi.
3. Sharma, O.P. 1996: Hills Economic Botany (Late Dr. A.F. Hill adapted by O.P. Sharma), Tata McGraw Hill Co. Ltd., New Delhi.
4. Simpson, B.B. and Conner-Ogorzaly, M. 1986: Economic Botany- Plants in Our World, McGraw Hill, New York

SCHEME OF EXAMINATION FOR B.Sc. (BOTANY) SEMESTER SYSTEM

w.e.f. Session 2021-22 Scheme of B.Sc. 1st Year

Semester I					
Sr. No.	**Paper code**	**Nomenclature**	**Marks+IA**	**Periods / week**	**Exam. Duration**
1.	BOT.1.1	Diversity of Microbes	40+10	4	3 hrs.
2.	BOT 1.2	Cell Biology	40+10	4	3 hrs.
3.	P-101	Practical (1.1& 1.2)	50	8	3hrs
Semester II					
4.	BOT 2.1	Diversity of Archegoniates	40+10	4	3 hrs.
5.	BOT 2.2	Genetics	40+10	4	3 hrs.
6.	P-102	Practical (2.1& 2.2)	50.	8	3 hrs
Total Semester I & II			**300**		

Scheme of B.Sc. II 2021-22

Semester III					
Sr. No.	**Paper code**	**Nomenclature**	**Marks+IA**	**Periods / week**	**Exam. Duration**
1.	BOT 3.1	Biology and Diversity of Seed Plants-I	40+10	4	3 hrs.
2.	BOT 3.2	Plant Anatomy	40+10	4	3 hrs.
3.	P-201	Practical (3.1& 3.2)	50	8	3 hrs
Semester IV					
4.	BOT 4.1	Biology and Diversity of Seed Plants II	40+10	4	3 hrs.
5.	BOT 4.2	Plant Embryology	40+10	4	3 hrs.
6.	P-202	Practical (4.1& 4.2)	50	8	3hrs
Total Semester III & IV			**300**		

Scheme of B.Sc. III 2021-22

Semester V					
Sr. No.	**Paper code**	**Nomenclature**	**Marks+IA**	**Periods / week**	**Exam. Duration**
1.	BOT 5.1	Plant Physiology	40+10	4	3 hrs.
2.	BOT 5.2	Ecology	40+10	4	3 hrs.
3.	P-301	Practical (5.1& 5.2)	50	8	3hrs
Semester VI					
4.	BOT 6.1	Biochemistry & Plant Biotechnology	40+10	4	3 hrs.
5.	BOT 6.2	Economic Botany	40+10	4	3 hrs.
6.	P-302	Practical (6.1& 6.2)	50	8	3hrs
Total Semester V & VI			**300**		
Grand Total Semester I – VI			**900**		

Note: -

There will be an internal assessment of 20%, in each theory paper. I Period =45 minutes

Practical examination will be held conducted at the end of each semester.

PRACTICALS

B.Sc. 1st Botany (First Semester)

Diversity of Microbes and Cell Biology (Code: P 101)

Max. Marks: 50 Time allotted: 3 Hours

2. Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given two specimens A, B & C (15)

4 Prepare smear/squash and find out two different stages of mitosis/meiosis. Identify and show it to the examiners and also give characters of identification. (12)

5 Identify giving two important characters of identification of the given spots 1, 2, 3,4
(one slide/ material from virus, bacteria, fungi, lichen). (8)

4. Field visit and collection records (5)

5. Practical records (5)

6. Viva-voce (5)

PRACTICALS

B.Sc. 1st Botany (Second Semester)

Diversity of Archegoniates and Genetics

(Code: P-201)

Max Marks: 50 **Time: 3hrs**

1. Identify, classify and write short morphological notes giving well labelled diagrams on the given two specimens from Bryophytes and Pteridophytes. (12)
2. One numerical regarding genetics (Mendelian inheritance or gene interaction) as per syllabus. (12)
3. Identify giving two important characters of identification of the given spots 1, 2, 3,4 (8)
4. Field Visit and collection records (8)
5. Practical records (5)
6. Viva-voce (5)

PRACTICALS

B.Sc. IInd Botany (Third Semester)

Biology & Diversity of Seed Plants-I and Plant Anatomy(Code: P 301)

Max. Marks: 50 **Time : 3Hours**

2. Cut the section of given material A and prepare a double-stained permanent mount of the given material. Identify giving reasons and show it to the examiner. (10)

2 Identify, classify and write morphological notes on the given material/specimens B & C from Gymnosperms. (10)

3 Identify, giving the important characters of identification of the spots/specimen 1 and 2 from Gymnosperms and 3 and 4 from angiosperms (10)

4 Filed visit and collection records. (10)

5 Note-book (5)

6 Viva-voce (5)

PRACTICALS

B.Sc. IInd Botany (Fourth Semester)

Max. Marks: 50 Time: 3Hours

8 Describe/compare the given flowers A and B in semi-technical language giving V.S. of flowers, T.S. of ovaries, floral diagrams and Floral Formulae. Identify and assign them to their respective families giving reasons. (12)

9 Dissect out the globular/heart-shaped embryo from the given material. (10)

10 Identify, giving the important characters of identification of the spots 1, 2 and 3 from embryology (9)

11 Field visit and collection records. (9)

12 Practical records (5)

13 Viva-voce (5)

Semester V Practical

Plant Physiology and Ecology (P-501)

Max. Marks: 50 **Time: 3hrs.**

1. Devise an experiment to demonstrate the physiological process (As per list).Perform it and show it to the examiner.	12
2. Comment on physiological experiment (Specimen set up/ model/chart).	10
3. Ecological experiment/ecological specimen (As per list)	12
4. Note Book, Collection and field report	10
5. Viva-voce	6

Semester VI

Practical

Semester V Practical

Plant Physiology and Ecology (P-501)

Max. Marks: 50 **Time: 3hrs.**

1. Devise an experiment to demonstrate the physiological process (As per list).Perform it and show it to the examiner.	12
2. Comment on physiological experiment (Specimen set up/ model/chart).	10
3. Ecological experiment/ecological specimen (As per list)	12
4. Note Book, Collection and field report	10
5. Viva-voce	6

Government PG College for Women Rohtak

Department Of Botany

Student Strength and details of Field Work/Project Report

(2021-22)

S.No	Session	Class/Sem.	Total no. of students	Field Work/Project Report: Place of Work
B.Sc 1st (Med. Botany)				
1.	2021-22	1st Sem.	196	Collection and identification of Algal and fungal (diseased plant) samples from college campus, water bodies around the campus and native places of students
		2nd Sem.	188	Collection and identification of Bryophyte and Pteridophyte samples from college campus, near water bodies/moist areas, around the campus and native places of students
S.No	**Session**	**Class/Sem.**	**Total no. of students**	**Field Work/Project Report: Place of Work**
B.Sc2nd (Med. Botany)				
2.	2021-22	3rd Sem.	150	Collection and identification of Herbarium specimen from Gymnosperms, Types/Modifications of Stems and leaves from college campus, around the campus and native places of students
		4th Sem.	142	Collection and identification of Herbarium specimen from angiosperm families from college campus, around the campus and native places of students

S.No	Session	Class/Sem.	Total no. of students	Field Work/Project Report: Place of Work
B.Sc3rd (Med. Botany)				
	2021-22	5th Sem.	152	Plant specimen showing Adaptations to water stress and salinity (morphological features of hydrophytes, xerophytes and halophytes).
		6th Sem.	148	Collection and identification of specimen (Botanical/Morphological description, brief idea of cultivation processing, sources and economic uses) of the Food plants ,Vegetables, Fibers plants, Spices, Medicinal plants, Beverages, Rubber, Sugar, Timber, Energy plantations and bio-fuels.

Dr Veena Sachdeva
Associate Professor in Botanty

Collection: B.Sc1st (Med. Botany)

Collection: B.Sc2nd (Med. Botany)

"The care of the Earth is our most ancient and most worthy, and after all, our most pleasing responsibility."

Collection: B.Sc3rd (Med. Botany)

1.3.3 Percentage of students undertaking project work/field work/internship (2021-22)

Programme name	Program Code	List of students undertaking project work/field work/internship	Link to the relevant document
B.Sc Medical Ist year Practicals: Collection	P-101(1.1&1.2) P-102 (2.1&2.2)	188 Students	Annex 6(I)
B.Sc Medical 2nd year Practicals: Herbarium	P-201(3.1&3.2) P-202 (4.1&4.2)	142 Students	Annex 6(II)
B.Sc Medical 3rd year Practicals: Project Report	P-301(5.1&5.2) P-302 (6.1&6.2)	148 Students	Annex 6(III)

Annex 6(I)

List of students undertaking Field work (Collection) Botany B.Sc. 1 (P 101 and P102)

S.No	Name	Class Roll. no
1	ANITA	1211331030001
2	SARITA	1211331030002
3	PREETI	1211331030003
4	PRIYA	1211331030004
5	BHAVIKA	1211331030005
6	MUSKAN	1211331030006
7	MEENU	1211331030007
8	MANISHA	1211331030008
9	NEHA	1211331030009
10	SUSHMA	1211331030010
11	NIKITA	1211331030011
12	DIPAKSHI	1211331030012
13	DIKSHA	1211331030014
14	SHIKHA DEVI	1211331030015
15	LALITA	1211331030016
16	SANJU	1211331030018
17	SAKSHI	1211331030019
18	TANNU	1211331030020
19	GARIMA	1211331030022
20	ANJALI	1211331030023
21	TANNU	1211331030024
22	RINKI	1211331030025
23	ANJALI	1211331030026
24	KHUSHBU	1211331030027
25	MOKSHITA	1211331030029
26	ISHA ROHILLA	1211331030030
27	NISHU	1211331030031
28	NIKITA	1211331030032
29	KAMANA	1211331030033
30	ALKA	1211331030034
31	DIKSHA	1211331030035
32	MINAKSHI KUMARI	1211331030036
33	KALPANA	1211331030037
34	VARSHA	1211331030038

35	NIKITA	1211331030039
36	TAMANA	1211331030040
37	ANNU	1211331030041
38	SAPNA YADAV	1211331030042
39	SARITA KUMARI	1211331030043
40	TAMANNA	1211331030044
41	ANKITA	1211331030045
42	VARSHA	1211331030046
43	RITU	1211331030047
44	TANU KUMARI	1211331030048
45	JYOTI	1211331030049
46	RITIKA	1211331030051
47	VAISHALI	1211331030052
48	KIRTI	1211331030053
49	ISHA DEVI	1211331030054
50	MAMTA	1211331030055
51	KOUSHIK NIDHI	1211331030056
52	RITIKA	1211331030057
53	SONIA	1211331030058
54	MANISHA	1211331030059
55	PARUL	1211331030060
56	USHA	1211331030061
57	AARTI	1211331030062
58	DRISHTI	1211331030063
59	KIRAN	1211331030064
60	NANCY	1211331030065
61	ANTIMA	1211331030066
62	SWEETI	1211331030068
63	KUSUM KUMARI	1211331030069
64	NEHA	1211331030070
65	ANJALI	1211331030071
66	MUSKAN	1211331030072
67	SULENA	1211331030073
68	SONAM	1211331030074
69	REENA DEVI	1211331030075
70	SAKSHI BIDLAN	1211331030077
71	DIKSHA	1211331030078
72	AARTI	1211331030079
73	KIRAN	1211331030080
74	NISHITAA	1211331030082
75	NEHA	1211331030083
76	RANI	1211331030084
77	RASHI	1211331030085
78	NISHA	1211331030086
79	REKHA	1211331030087

80	NEHA	1211331030089
81	PREETI	1211331030090
82	YOGITA	1211331030091
83	SHALU	1211331030092
84	MUSKAN	1211331030095
85	MONIKA	1211331030096
86	ANNU	1211331030097
87	MEGHA	1211331030098
88	POOJA SHARMA	1211331030099
89	SWETA	1211331030100
90	PREETI	1211331030101
91	SALONI	1211331030102
92	BABY	1211331030103
93	SHWETA	1211331030104
94	PAYAL	1211331030105
95	TANISHA	1211331030108
96	NIHARIKA	1211331030110
97	HARSHITA	1211331030111
98	NITIKA	1211331030112
99	PRIYANSHU	1211331030113
100	SHUBHAM	1211331030114
101	RAVINA	1211331030115
102	POOJA	1211331030116
103	BHARTI	1211331030117
104	DEVANSHI	1211331030118
105	HIMANSHI	1211331030120
106	SONIA	1211331030124
107	VARSHA GOYAL	1211331030125
108	KUSHA	1211331030126
109	MANISHA	1211331030127
110	LAXMI	1211331030128
111	NIKITA	1211331030129
112	CHESTA	1211331030130
113	SHEETAL	1211331030131
114	SONAL	1211331030132
115	GEETA	1211331030134
116	RUBY	1211331030135
117	TANNU	1211331030137
118	CHAHAT	1211331030138
119	RIYA	1211331030139
120	SEEMA	1211331030140
121	PAYAL	1211331030141
122	NITIKA	1211331030142
123	NIKITA	1211331030144
124	SANGEETA	1211331030145

125	TAMANNA	1211331030147
126	GAYATRI	1211331030148
127	ANJALI	1211331030149
128	KASHISH	1211331030150
129	ANJALI	1211331030151
130	POOJA	1211331030152
131	TANNU	1211331030153
132	MADHU	1211331030154
133	BHAWNA	1211331030155
134	DEVIKA	1211331030157
135	JYOTI	1211331030159
136	TANYA	1211331030160
137	PRIYANKA	1211331030162
138	PINKI	1211331030163
139	TINI	1211331030164
140	MUSKAN	1211331030165
141	TANU	1211331030166
142	KANCHAN SAINI	1211331030167
143	KUSUM	1211331030169
144	AAYUSHI	1211331030170
145	NIDHI	1211331030171
146	SUNIL	1211331030172
147	AAHUTI	1211331030173
148	VIDHI	1211331030174
149	ASHI	1211331030175
150	GIRISHA YADAV	1211331030176
151	KHUSHI	1211331030177
152	USHA RANI	1211331030178
153	ANSHU	1211331030179
154	BHAWNA	1211331030180
155	DIKSHA	1211331030181
156	SUHANI	1211331030182
157	DRISHTI	1211331030183
158	DIVYANSHI	1211331030185
159	SUSHAMA	1211331030186
160	PRAGYA	1211331030187
161	MONIKA	1211331030188
162	SURAKSHA	1211331030189
163	ANNU KUMARI	1211331030191
164	PREETI	1211331030192
165	NIKITA	1211331030193
166	CHETNA	1211331030195
167	DEEPIKA	1211331030196
168	ANUSHKA	1211331030197
169	ANUSHKA	1211331030198

170	BHUMIKA	1211331030199
171	SANJANA	1211331030200
172	ISHA	1211331030201
173	RAKHI	1211331030202
174	SWEETY	1211331030203
175	NAMRATA	1211331030204
176	ANUPRIYA	1211331030206
177	PARUL	1211331030208
178	ANISHA	1211331030209
179	PRACHI	1211331030210
180	CHETNA	1211331030211
181	TULSI	1211331030212
182	KOMAL	1211331030213
183	NANCY	1211331030214
184	KASHISH	1211331030215
185	MEHAK	1211331030216
186	SHRUTI	1211331030217
187	SAKSHI	1211331030218
188	NEHA	1211331030219

Annex 6(II)

List of students undertaking Field work (Herbarium) Botany B.Sc. II (P 201 and P202)

S.No	NAME	ClassRollNo
1	KANCHAN	120133030003
2	AARTI	120133030004
3	AARTI	120133030006
4	PRITI	120133030008
5	NIKITA	120133030009
6	NISHA	120133030010
7	ANITA	120133030012
8	ASHA	120133030015
9	JYOTI	120133030016
10	MONIKA	120133030017
11	KOMAL	120133030018
12	NIDHI	120133030019
13	DEEPIKA	120133030020
14	ANJALI	120133030022
15	KOMAL VASHIST	120133030024

16	PRIYA	120133030025
17	SANDHYA	120133030028
18	PARUL VATS	120133030029
19	PRIYANKA	120133030030
20	VARSHA	120133030032
21	ISHA	120133030033
22	PARUL	120133030034
23	NISHA	120133030036
24	SIKHA	120133030039
25	ANCHAL	120133030040
26	MONIKA	120133030041
27	KOMAL	120133030042
28	ANKITA RANI	120133030043
29	KHUSHI	120133030044
30	HIRAL BIDHAN	120133030045
31	MONI	120133030046
32	SHRUTI	120133030048
33	NITU	120133030049
34	KARINA DEVI	120133030050
35	PRITI	120133030051
36	DEEPIKA SHARMA	120133030054
37	SHWETA	120133030056
38	SHIKHA	120133030057
39	KOMAL YADAV	120133030058
40	SANEH	120133030059
41	TANNU	120133030062
42	AASTHA	120133030063
43	ASHA	120133030064
44	TANU	120133030065
45	MEENAKASHI	120133030070
46	ADITI SANGWAN	120133030071
47	SWEETY	120133030072
48	SANJU	120133030073
49	POOJA	120133030074
50	SHIWANI	120133030077
51	SAPNA	120133030079
52	KANIKA	120133030080
53	KOMAL	120133030081
54	NITU	120133030082
55	MUNNY	120133030084
56	SHRUTI	120133030085
57	NIKITA	120133030089

58	CHETNA	120133030091
59	RAKHI	120133030093
60	ANCHAL	120133030094
61	VARSHA	120133030096
62	MADHU	120133030097
63	DEEPALI	120133030100
64	SAKSHI	120133030101
65	POONAM	120133030103
66	SNEH	120133030104
67	MEENU	120133030105
68	POOJA	120133030106
69	RINKU	120133030108
70	ANJALI	120133030109
71	ANNU	120133030110
72	ANNU	120133030115
73	ANJALI	120133030116
74	PREETI	120133030117
75	DIKSHA	120133030118
76	MONIKA	120133030120
77	UMA RANI	120133030121
78	ARTI	120133030123
79	ANNU	120133030125
80	NEHA	120133030127
81	PRIYA	120133030129
82	SNEHA	120133030130
83	ANKITA	120133030132
84	ANJALI	120133030133
85	MAMTA	120133030134
86	SALINA	120133030136
87	NUTAN KUMARI	120133030137
88	ANNU	120133030139
89	CHANCHAL	120133030140
90	DEEPTI	120133030141
91	PRERNA	120133030145
92	BHAWNA	120133030146
93	KAJAL	120133030148
94	KAJAL	120133030149
95	KAJAL	120133030150
96	PREETI	120133030151
97	BHAWNA	120133030152
98	VANISHA	120133030153
99	PRIYANKA	120133030154

100	PRIYANKA	120133030155
101	TANU	120133030157
102	JYOTI	120133030159
103	URMILA	120133030160
104	VARSHA DUTT	120133030161
105	KIRAN	120133030164
106	MEGHA	120133030165
107	RIYA	120133030166
108	MUSKAN	120133030168
109	HIMANSHI	120133030169
110	KAJAL	120133030170
111	ANJALI	120133030171
112	SWEETY	120133030172
113	ISHA	120133030173
114	SAKINA	120133030174
115	TISHA	120133030175
116	SHEETAL	120133030177
117	SWIN KUMARI	120133030179
118	BHARTI	120133030180
119	SAKSHI	120133030182
120	MONIKA	120133030183
121	NIDHI	120133030184
122	SWATI	120133030186
123	ANSHIKA	120133030187
124	SONAM	120133030190
125	TANNU	120133030191
126	EKTA	120133030192
127	ASHA	120133030193
128	MUSKAN	120133030194
129	POOJA	120133030195
130	REEMA	120133030196
131	DEEPANSHI	120133030197
132	ANSHU	120133030199
133	PRIYA	120133030202
134	TANNU	120133030203
135	ASHU	120133030205
136	SHEETAL	120133030206
137	TAMANNA	120133030208
138	BHUMIKA	120133030209
139	ANOOTHI YADAV	120133030210
140	RAKHI	120133030212
141	GARIMA	120133030213

142	MAHAK	120133030219

Annex 6 (III)

List of students undertaking Field work (Project) Botany B.Sc. III (P 301 and P302)

S.No	StudentName	ClassRollNo
1	BHAWNA	2188420148
2	kashish	3069720002
3	DIKSHA	3069720004
4	RIYA	3069720005
5	PRIYANKA	3069720006
6	KANISHKA	3069720008
7	REKHA	3069720009
8	MAYA DEVI	3069720010
9	PINKI	3069720011
10	AARTI DHANKHAR	3069720013
11	VARSHA	3069720017
12	sujata	3069720018
13	MANISHA	3069720019
14	MEGHA	3069720020
15	amrita	3069720021
16	anjali	3069720022
17	neha	3069720024
18	annu	3069720025
19	renu	3069720026
20	prachi	3069720027
21	sakshi	3069720029
22	bindiya	3069720030
23	sapna	3069720033
24	manju	3069720034
25	annu	3069720035
26	prachi	3069720036
27	seema	3069720037
28	SARISKA	3069720038
29	SHEETAL	3069720041

30	PREETI	3069720043
31	ASTHA	3069720044
32	NEHA	3069720045
33	RENU	3069720046
34	KIRTI	3069720047
35	RITU	3069720048
36	DEEPANSHI	3069720049
37	LAKSHMI	3069720050
38	PINKI KUMARI	3069720053
39	SHIVANI	3069720056
40	HARSHA	3069720057
41	AMISHA	3069720059
42	ANJALI	3069720060
43	PINKI	3069720061
44	TANNU	3069720063
45	MIRAN	3069720065
46	DIPALI	3069720066
47	GEETA	3069720067
48	POONAM	3069720068
49	shiksha	3069720069
50	priyanka	3069720070
51	nidhi	3069720071
52	divyanshi	3069720073
53	ANKITA	3069720075
54	AARTI	3069720076
55	NISHU	3069720077
56	RAVINA	3069720079
57	POOJA	3069720080
58	NIDHI	3069720082
59	Nishu devi	3069720087
60	Annu kumari	3069720089
61	Ritu	3069720090
62	Anjali	3069720091
63	Kirti	3069720095
64	Sarika	3069720099
65	Nisha	3069720100
66	MANISHA	3069720102
67	VINTI	3069720103
68	ASHA	3069720105
69	NAMRATA	3069720107
70	RAKHI	3069720108

71	REENU DEVI	3069720110
72	TANNU	3069720113
73	KIRAN	3069720119
74	KAJAL SAINI	3069720121
75	SAKSHI	3069720122
76	MONIKA SAINI	3069720123
77	SANGEETA	3069720126
78	SHIKHA	3069720127
79	PREETY	3069720128
80	PRIYANKA	3069720129
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82	ANSHU	3069720134
83	LAXMI DEVI	3069720137
84	NITU	3069720140
85	AARTI	3069720142
86	RAJNEE	3069720143
87	RITIKA	3069720144
88	RAKSHA	3069720145
89	RADHA	3069720146
90	KAJAL	3069720147
91	ANURADHA	3069720149
92	NAINA SHARMA	3069720150
93	MUSKAN	3069720151
94	PRANJAL	3069720152
95	HEMLATA	3069720153
96	ANJLI	3069720154
97	SEEMA	3069720155
98	MEENA	3069720158
99	NISHA	3069720160
100	DAMINI KAUSHIK	3069720161
101	SANJANA	3069720162
102	NEERAJ	3069720164
103	SUNIDHI	3069720165
104	KIRTI	3069720166
105	NISHCHAL	3069720167
106	NEHA	3069720169
107	ANNU KUMARI	3069720170
108	EKTA POONIA	3069720171
109	HIMANSHI DEVI	3069720172
110	MINAL PANWAR	3069720174
111	RUBY	3069720178

112	KUSUM	3069720179
113	NISHA	3069720181
114	ANKITA	3069720183
115	PRIYA	3069720184
116	RAVINA	3069720185
117	LAKSHITA	3069720186
118	RITU	3069720187
119	MUSKAN	3069720188
120	MAHIMA	3069720189
121	EKTA	3069720190
122	KUMARI GARIMA	3069720191
123	RITIKA	3069720192
124	CHITWAN DAHIYA	3069720194
125	megha	3069720196
126	nishu	3069720197
127	RINKI	3069720198
128	BHAKTEE	3069720199
129	JYOTI	3069720200
130	RITU	3069720201
131	TANNU	3069720202
132	ANKITA	3069720205
133	KUSUM	3069720206
134	MUSKAN HOODA	3069720208
135	PRIYANKA	3069720209

136	ADITI SAINI	3069720212
137	NEHA	3069720213
138	GARIMA	3069720214
139	NISHA	3069720215
140	BHARTI	3069720216
141	VARSHA	3069720217
142	SHRUTI	3069720219
143	SHEETAL	3069720220
144	APURVA ROHILLA	3069720221
145	RIMPY	3069720222
146	LAXMI	3069720223
147	HIMANI	3069720224
148	LEENA KUMARI	3069720226

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