BACHELOR OF SCIENCE–(ZOOLOGY,BIOLOGY,CHEMISTRY)

Mode	Dual Mode University System
Duration	3 Years
Pattern of Examination	Annual
Eligibility	10+2 in relevant subject or 3 years diploma in relevant subject

SCHEME OF EXAMINATION

Subject Code	Title
1st Year	
BSCZBC-101	ATOMIC STRUCTURE & PERIODIC CLASIFICATION
BSCZBC-102	GENETICS &CELL BIOLOGY
BSCZBC-103	INVERTIBRATE-I
BSCZBC-104	CHEMICAL BONDING & NUCLEAR CHEMISTRY
BSCZBC-105	HISTORY OF BOTANY, ALGAE &BRYOPHYTE
BSCZBC-106	PRACTICAL
2nd Year	
BSCZBC -201	GENERAL MAMMALIAN PHYSIOLOGY
BSCZBC -202	HISTORY OF BOTANY, ALGAE &BRYOPHYTE
BSCZBC -203	INVERTIBRATE-II
BSCZBC -204	PTERIDOPHYTE AND GYMNOSPERM
BSCZBC -205	INTRO ORGANIC CHEMISTRY & HYDROCARBONS
BSCZBC-206	PRACTICAL
3rd Year	
BSCZBC -301	NATURAL PRODUCTS
BSCZBC -302	ECONOMIC ZOOLOGY
BSCZBC -303	PHOTOCHEMISTRY & SPECTROSCOPY
BSCZBC -304	ANATOMY AND EMBRYOLOGY
BSCZBC -305	DEVELOPMENT BIOLOGY & ETHOLOGY
BSCZBC-306	PRACTICAL

BSCZBC -101: ATOMIC STRUCTURE & PERIODIC CLASIFICATION

Unit I

Structure of atom: Quantum and wave mechanical approaches to the structure of atom.

Unit II

Periodic classification and Properties:

(a)Mendleef, Modern, Extended and long form.

(b) Periodic properties: Atomic and ionic radii, crystal co-ordination no., Radius ratio, factors influencing magnitude of ionic radii. Periodic variations of atomic and ionic radii Ionization energy, electron affinity and electronegativity.

BSCZBC -102: GENETICS & CELL BIOLOGY

Unit I

Genetics- Mitosis & meiosis. Mendel's law of inheritance, linkage & Crossing over, Human Chromosomes & human chromosomal abnormalities, Sex-linkage & Sex determination in Drosophila & man, Blood group & Hemoglobin Genetics in man, DNA & RNA structure Genetic code

Unit II

Cell Biology – Nucleus, Nuclear membrane & nucleolus, polytene&lampbrush

chromosomes, structure& function of plasma membrane, Golgi apparatus, mitochondria, lysosomes, Endoplasmic reticulum &Ribosomes, Cilia, Flagella, Microtubules & Microfilaments.

BSCZBC -103: INVERTIBRATE-I

Unit I

Phylum Protozoa: General characters, classification, structure, habit & habitat, life cycle of any two.

Unit II

Phylum Porifera& Coelenterate: General characters, classification, structure, habit & habitat, canal system in Sycon, polymorphism in coelenterate & coral reef formation.

Unit III

Phylum Platyhelminthes: General characters, classification, structure, habit & habitat, life cycle of Taeniasolium, parasitic adaptations in platyhelminthes.

Unit IV

Phylum Aschelminthes: General characters, classification, structure, habit & habitat, plant parasitic nematodes, life cycle of Ascaris.

BSCZBC -104: CHEMICAL BONDING & NUCLEAR CHEMISTRY

Unit I

Chemical Bonding: Co-valent, Ionic, Metallic, Hydrogen, Vander Waals, Lattice energy, Hydration energy, Fajan's rule, Co-ordinate bond.

Unit II

Nuclear and Radiochemistry.

BSCZBC -105: HISTORY OF BOTANY, ALGAE &BRYOPHYTE

Unit I

Scope of Botany, Phylogenetic trends in botany, contribution of some India Scientist like B. Sahni, M.O.P. Iyengar, P. Maheswari, S. R. Kashyap

Unit II

General Description, classification & economic importance of Algae. Important feature of at least two members of each: Cyanophyceae, Chlorophyceae, Xanthrophyceae, Bacillariophyceae, Phaeophyceae&Rodophyceae.

Unit III

General description, classification & economic importance of Bryophytes. External

morphology, Anatomy & reproduction & life cycle of thalloid& leafy bryophytes with special reference to alternation of generation.

BSCZBC -106: PRACTICAL

PRACTICAL

BSCZBC -201: GENERAL MAMMALIAN PHYSIOLOGY

Unit – I

Enzymes

1.1 Enzymes –Distribution and chemical nature of enzymes

1.2 General properties of enzymes

1.3 Classification of enzymes

1.4 Factors affecting enzyme activity

Unit-II

Nutrition and Digestion

2.1 Structure and functions of digestive glands - (Salivary, Gastric, Intestinal, Liver and Pancreas)

2.2 Gastrointestinal hormones

2.3 Digestion and absorption of proteins, carbohydrates and lipids.

2.4 Vitamins- Fat soluble and water soluble vitamins; Sources, deficiency and diseases

Unit-III

Respiration

3.1 Respiratory pigments - Types , distribution and properties

3.2 Mechanism of Respiration

3.3 Transport of O 2 and CO 2

3.4 Respiratory disorders and effects of smoking

Unit-IV

Circulation

4.1 Composition and functions of blood

4.3 Blood clotting – Intrinsic and extrinsic factors, blood groups and Rh factor

4.4 Cardiac cycle

4.5 E.C.G. and Blood pressure

BSCZBC -202 INVERTIBRATE-II

Unit I

Phylum Annelida: General characters, classification, structure, habit & habitat, metamerism in Annelida, Economic importance of Earthworm.

Unit II

Phylum: Arthropoda: General characters, classification, Insects metamorphosis, Palaemon, Economic importance of Arthopods.

Unit III

Phylum Mollusca: General characters, classification, Torsion & Desertion in

Gastropoda, Economic importance of mollusca.

Unit IV

Phylum Echinodermata: General characters, classification, water vascular system in star fish, Regeneration & Autonomy.

BSCZBC -203: PTERIDOPHYTE AND GYMNOSPERM

Unit I

Introduction, classification & Economic importance of Pteridophytes. Evolutionary trends.

Unit II

Study of the following genera: RhyniaLycopodium, Selaginella, Marsilea and Pteris stellar evolution, Heterospory, evolution of seed Habit in Pteridophytes.

Unit III

Introduction, classification and Economic importance of Gymnosperms

Unit IV

Study of the following genera: Cycas, Pinus& Ephedra.

BSCZBC -204: INTRO ORGANIC CHEMISTRY & HYDROCARBONS

Unit I

Organic Reactions and their Mechanisms: Electron displacement effects. Bond fission, Carbonium ions Carbanions. Attacking reagent and their role. Types of reaction mechanisms and Organic reactions.

Unit-II

Alkanes: Structure, Nomenclature, Isomerism, Preparation, Properties.

Unit III

Alkenes: Structure, Nomenclature, Isomerism, Preparation, Properties.

Unit IV

Alkyl Halids: Structure, Nomenclature, Isomerism, Preparation, Properties.

Unit V

Organo metallic compounds: Grignard Reagent Structure, Preparation, Properties.

Unit VI

Alcohols: Introduction, Classification. Structure, Nomenclature, Isomerism Preparation, Properties

BSCZBC -205: TAXONOMY , MORPHOLOGY AND ECONOMIC BOTANY

Unit I

Broad out line of morphology of vegetative & reproductive organ of Angiosperms.

Unit II

Principles of Systematics, classical & modern taxonomy, Rules of nomenclature. Comparative study of different classification systems proposed. General morphology of flower & its parts. Taxonomic studies of some important families.

Unit III

Use of plants for human welfare with special reference to: Food plants, Drug yielding plants, Timber, Masticatories &Fumicatories, Beverages, Rubber, Edible oils, Dyes, Resin, Toxin & Gums.

BSCZBC -206: PRACTICAL

PRACTICAL

BSCZBC -301: NATURAL PRODUCTS

Unit I

Hetrocyclic Compounds: Five membered rings Pyrrole: Structure, Preparation, Properties Furan structure, preparation, properties. Thiophene: structure, preparation, properties. Six membered rings: structure, preparation, properties. Pyridine: structure preparation, properties.

Unit II

Alkaloids: Classification, Determination of Structure Coniine, Nicotine, Atropine Structure and Properties.

Unit III

Terpenoids: Isoprene rule, Classification, Structure and Properties of Mycrene, Citral, Camphor.

Unit IV

Polymers: Addition Polymers, Copolymers, condensation Polymers, Thermoplastic and Thermo setting Polymers, Natural and Synthetic Rubber.

Unit V

Introduction to Spectroscopy: Ultraviolet and Visible Spectroscopy (UV), Infrared Spectroscopy (IS), Nuclear Magnetic Resonance Spectroscopy (NMR), Mass

Spectroscopy (MS).

Books Recommended:

1. Reaction Mechanism: S.M.Mukherjee&S.P.Singh.

2. Advanced Organic Chemistry: B.S.Bahl&ArunBahl.

3. Advanced Organic Chemistry: P.L.Soni&H.M.Chawla

4. Advanced Organic Chemistry: M.K.Jain.

BSCZBC -302: ECONOMIC ZOOLOGY

Unit I

Protozoa: Protozoan parasitic diseases of man & domestic animals with special reference to Endameba histolytic & plasmodium. Platyhelminthes: Life cycle & zoonotic significance of Taeniasolium.

Unit II

Arthopoda: Beneficial & harmful insects-Honeybee, silkworm, lac, Termite,& locust, dengue, encephalitis-their prevention & control.

Unit III

Aqua culture- basic concepts, management & economics (pearl culture, Prawn culture fish & fisheries)

BSCZBC -303:PHOTOCHEMISTRY & SPECTROSCOPY

Unit-I

Photochemistry: Photochemistry and thermal reactions, Chain reaction, free radical chains, thermal decomposition of acetaldehyde and ethane, Lambert and Beer's law, Grothus Draper's law, Elinstin law of decomposition of hydrogen-iodide, hydrogen-bromine etc, Fluoescence, Photosensitization, Phosphorescence Chemiluminescence.

Unit II

Spectroscopy

(a) UV (b) IR (c) NMR (d) Raman (e) Mass

BSCZBC -304: ANATOMY AND EMBRYOLOGY

Unit I

Broad outline of anatomy of vegetative & reproductive organs of angiosperms. An account of normal primary & woody plants. Primary anomaly. Anomalous secondary growth in Boerhaavia, Bignonia, Dracaena and Chenopodium.

Unit II

Nodal Anatomy and Anatomy of leaf

Unit III

A brief history of Embrology, development of author & pollen, Microsprogenesis, author dehiscence &viability curvature of ovule leading to different types, megasporogenesis& mono, bi & tetra sporic type of embryo-sacs. Types of embryogeny. General account of apomixes &polyembryony. Development of seed.

BSCZBC -305: DEVELOPMENT BIOLOGY & ETHOLOGY

Unit I

Growth & aging- concept of growth,degrowth& cell death. Mechanism of Growth, Growth curves &their interoperation.Types of cell growth, Aging.

Unit II

Ant predator behavior- fighting, fleeing protective armour, chemical defense, camouflage, warning signals & startle displays. Fighting behavior- Low animals mark their territories & defend them, Perform threat displays.

Unit III

Social behavior – advantage of being social, Low animals establish social Leiarchies, mating groups.Courtship displays & behavior.

BSCZBC -306: PRACTICAL

PRACTICAL