

નં. એકેડેમી ક. બી: ૨૭૩૪૨ : ૧૯૯૫
અમદાવાદ-૯ તા. ૭ - ૯ - ૧૯૯૫

પરિપત્ર : ૨૯

વિજ્ઞાન વિદ્યા ભવનના અધ્યક્ષશ્રીને જણાવવાનું કે એમ. એસસી
ભાગ-૧-૨ લાઇક સાયન્સ અને એમ. એસસી. ભાગ-૧, ૨ના પે-વાયરમેન્ટલ
સાયન્સનો અભ્યાસક્રમ આ સાથેના પરિશિષ્ટ મુજબ સુધારવામાં
આવ્યો છે, જેનો અમલ જુન, ૧૯૯૫થી કરવાનો રહેશે.

ગોપાલ શાહ

કુલસચિવવહી

પ્રતિ,

- ૧ અધ્યક્ષશ્રી
વિજ્ઞાન વિદ્યા ભવન
ગુજરાત યુનિવર્સિટી
અમદાવાદ-૯
- ૨ ડિપાર્ટમેન્ટ હેડ સાયન્સ
પે-વાયરમેન્ટલ વિભાગ, વિજ્ઞાન વિદ્યા ભવન
ગુજરાત યુનિવર્સિટી,
અમદાવાદ-૯
- ૩ ડિપાર્ટમેન્ટ હેડ
લાઇક સાયન્સ વિભાગ
વિજ્ઞાન વિદ્યા ભવન, ગુજરાત યુનિવર્સિટી,
અમદાવાદ-૯
- ૪ પરીક્ષા નિયામકશ્રી
પરીક્ષા વિભાગ
ગુજરાત યુનિવર્સિટી
અમદાવાદ-૯
- ૫ માસી રજિસ્ટ્રાર
પી. જી. વિભાગ, ગુજ યુનિ.
અમદાવાદ-૯
- ૬ શ્રી એ. કે. શાહ
પરીક્ષા વિભાગ
ગુજરાત યુનિવર્સિટી
અમદાવાદ

- ૧૦ નકલ -

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A.C. = 4/9/95

Item No.-(4)

LIFE SCIENCE

Paper	Title	Marks		Total
		Theory	Practical	
<u>M.Sc. PART-I.</u>				
Paper-I	Physical & Biochemical Principles.	100	50	150
Paper-II	Elements & Plant Sciences.	100	50	150
Paper-III	Animal Systems, Evolution Biology & Ecology.	100	50	150
TOTAL		300	150	450
<u>M.Sc. PART-II</u>				
Paper-IV	Applied Microbiology	100	50	150
Paper-V	Biostatistics & Modern Instrumental Techniques.	100	50	150
Paper-VI	Elective; Any one of the Following: (i) Modern Trends in Biodiversity, cell biology & Ethnobotany. (ii) Molecular Biology, Genetics, Endocrinology & Immunology. (iii) Bicololecules, Biomembrane, Bioenergetics & Environmental Life Science.	100	50	150
TOTAL		300	150	450

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M.Sc. PART I

Life Science - Paper I

(PHYSICAL AND BIOCHEMICAL PRINCIPLES)

1. Ionic Theory, Acids, Bases, Salts, PH, Buffer Solution, Ionisation constants (pka) potentiometry and conductometric titrations.
Oxidation- Reduction Reactions.
2. Chemical reactivity, Chemical Equillibria, Chemical Kinetics, Order of reaction, First order reaction, Half life. Colloids and Colloidal Solution. Nature, Preparation, Properties and Applications.
3. Thermodynamics and Bioenergetics, Concepts of internal energy, enthalpy, entropy, First and Second law of Thermodynamics, Carnote cycles, free energy and their applications in bioenergetic processes.

4. Carbohydrates:

Classification, Nomenclature, Stereoisomerism and Optical Isomerism, Killani Synthetics, stereo-isomerism and optical isomerism in carbohydrates Reactions of monosaccharides, Epimers and Epimerisation, Mutarotation & cycle structure of glucose, Disaccharides, Structural determination of sucrose, Maltose and cellobiose, Lactose.

Nucleic Acid:

Synthesis of purine and primidine compounds. Catabolism of of purine and primidine.

5. Lipids:

Classification, Neutral Lipids: Glycerides, Saponification, Fatty Acids and their types, Phospholipids, Glycolipids, Saponification number, Iodine Number, Acetyl Number, Acid Number.

Amino Acids & Proteins:

Introduction, structure of amino acids, Amino acids as dipolar ions, Isoelectric point of Amino acids, Determination of structure of Peptide Terminal Residue Analysis : N-Terminal Residue, C-Terminal Residue.

Proteins:

Classification, structure of Protein: Primary, Secondary structure. Amino acid synthesis and oxidations. Urea cycle, creatinine, choline and uric acid.

Life Science-Paper II
(ELEMENT OF PLANT SCIENCES)

1. Morphology, Anatomy and Taxonomy: Patterns of variation in morphology and life history of plants - algae of angiosperms; Comparative anatomy and developmental morphology of gymnosperms and angiosperms; Principles of taxonomy as applied to the systematics.
2. Experimental embryology and economic botany : Structural and functional aspects of pollen and pistil; male sterility, self and interspecific incompatibility, fertilization, embryo and seed development; Importance of plants of food, fibre, timber, medicinal and industrial values.
3. Physiology : Water relations, mineral nutrition, photosynthesis, -----
photorespiration; Physiology and biochemistry of seed dormancy and germination; growth and development-hormonal regulation; physiology of flowering and senescence.
4. Plant breeding : Principles of plant breeding; important; -----
convention methods of breeding of self and cross pollinated and vegetatively propagated crops; Non-convention methods; polyploidy, genetic variability; methods of genetic engineering and their applications in agriculture.
5. Environment biology : Concept and dynamic of ecosystem; -----
components, food chain and energy flow, food web and trophic levels; ecological pyramids; Community structure and organisation
Biogeochemical cycles.

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M.Sc. PART I

Life Science Paper III

(ANIMAL SYSTEMS, EVOLUTION BIOLOGY & ECOLOGY)

(i) Structure and Function of Animal Systems:

Structure and physiology of the vertebrate muscle- skeletal, cardiac and smooth; Physiology of digestion, regulation of digestive secretions; Physiology of blood-structure, haemopoiesis, coagulation, respiratory pigments, respiratory function of blood,

Heart beat; initiation, conduction, regulation.

Physiology of respiration, exchange and transport of gases.

Physiology of vertebrate kidney, role of kidney in body water regulation, nitrogen excretion.

Structure and physiology of the neuron, excitability of membranes, condition in nerves, synapse.

(ii) Evolutionary Biology :

- Concept of Organic evolution,
- Sources of evolution; variations, mutations, recombination, polyploidy, isolation, natural selection.

- Origin of species, Population genetics and evolution; genetic drift, Hardy-Weinberg law, polymorphism,

† Molecular phylogeny;

Adaptations and mimicry; microevolution macroevolution; Evolution of life on earth; Evolution of man; future prospects.

(iii) Elements of Developmental Biology :

Fertilization, Parthogenesis; Cleavage, gastrulation, Concepts of organisms and induction; Rudimentary organ formation; Differentiation; Organogenesis; Regeneration; Growth patterns. Newer trends in development and its regulation.

(iv) Principles of Ecology:

Population density growth and selection; symbiotic relationships; predation and parasitism; Niche theory; Communities; Food chains, food webs, Energy transfer through trophic levels, Ecological succession, Ecosystems; biomes; Influence of human activities on ecosystem. A brief survey of Indian biomes.