Sri Satya Sai University of Technology & Medical Sciences, Sehore (M.P.)

Syllabus of Examination
Six Semester - Bachelor of Science -(Microbiology)

pCHEMISTRY

BSC 601A

UNIT-I

Amino acids: Classification, structure, stereochemistry of amino acids, acid base behavior, isoelectric point, general methods of preparation and properties of α-amino acids. Proteins and peptides. Introduction to peptides linkage, end group analysis, classification, properties and structure of proteins (primary, secondary and tertiary).

Nucleic acids: Introduction of nucleic acids and constituents of nucleic acid, Ribonucleosides, Ribonucleotides, double helical structure of DNA.

UNIT-II

Organometallic Chemistry: Synthesis; structure and bonding in metal carbonyl complexes, metal olefin complexes and metal alkyne complexes. Oxidative addition reactions.

UNIT-III

Magnetic properties of transition metal complexes: magnetic moment (spin only and with L-S coupling), orbital contribution magnetic moment.

UNIT-IV

Infrared spectroscopy : Statement of the BornOppenheimer approximation, rotational spectrum of diatomic molecules. Energy levels of a rigid rotator, selection rule, intensity of absorption bands, MaxwellBoltzmann distribution and population of energy levels.

UNIT-V

NMR Spectroscopy Principle and Instrumentation, NMR active nucleus, chemical shift, spin-spin coupling, spectrum of ethanol and ethanal.

Surface Phenomena and Catalysis: adsorption of gases and liquids on solid adsorbent, Freundlich and Langmuir adsorption isotherms, determination of surface area, characteristics and mechanism of heterogeneous catalysis.

Books Suggestion-

1. Physical Chemistry-Puri, Sharma and Pathania, Vikas Publications, New Delhi

2. Physical Chemistry -G.M. Barrow, International Student Edition, McGraw Hill.

3. The Elements of Physical Chemistry, P.W. Atkins, Oxford U n i v e r s i t y Press

4. Physical Chemistry, R.A. Alberty, Wiley Eastern Ltd.

5. Physical Chemistry Through problems, S.K. Dogra and S. Dogra, Wiley Eastern

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Subject : Botany

Cell Biology,Genetics and Biotechnology

BSC 602B

Unit-1

The cell envelops and cell organelles : plasma membrane, lipid bilayer structure, functions of the cell wall. Structure and function of cell organelles Nucleus Chloroplast, Mitochondrion. Golgibodies, ER, Peroxisome and Vacuole,

Unit-2

Chromosomal organization: Structure and functions of Chromosome, centromere and telomere special types of chromosomes, Mitosis and Meiosis. Variations in chromosome structure : Deletion, Duplication,Translocation and Inversion; Variation in chromosome number, Euploidy, Aneuploidy, DNA the genetic material, DNA structure and replication. Nucleosome model.

Unit-3

Genetic inheritance: Mendelism: laws of dominance, segregation and independent assortment; Linkage analysis; Interactions of genes. Cytoplasmic inheritance Mutations: spontaneous and induced: Transposable elements; DNA damage and repair.

Unit-4

Gene: Structure of gene, genetic code, transfer of genetic information; Transcription, translation, protein syntesis, tRNA, and ribosomes. Regulation of gene expression in prokaryotes and eukaryotes.

U n i t - 5

Biotechnology: Functional definition; basic aspects of plant tissue culture; cellular

totipotency, differentiation and morphogenesis biology of *Agrobacterium*; vectors for gene delivery and marker genes. Important achievements of biotechnology in

agriculture. **Genetic engineering:** Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements. Gene mapping and chromosome walking.

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Practical Work

Objectives

i) To impart understanding of internal cell structures and their organization.

ii) To develop the skills for the preparation of smear for study of cell division.

iii) To develop the skills for the understanding of mendel's law.

iv) To impart the skills of isolation of DNA.

v) To familiarize the students with the technique of micro propagation and isolation

of protoplast.

Suggested Books :

1. Alberts B.D. Lewis, J.Raff, M.Rubers, K. and Watson I.D. 1999 molecular Biology of Cell Garland Pub. Co. Inc. New York, U.S.A.

2. P.K. Gupta 1999 A text Book of Cell and Molecular Biology, Rastogi Pub. Meerut India.

3. Kleinsmith L.J. and Molecular Biology (2nd edition) Harper Collins College pub. New York USA.

4. P.K. Gupta Genetics Rastogi Pub. Meerut.

5. Sinha & Sinha Cytogenetics & Plant Breeding Vikas Publication

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Microbiology
Paper: Industrial Microbiology
Code: BSC 603 C

Unit-I Production of alcohol, wine, beer, organic acid (acetic acid, citric acid).

Unit-II Production of antibiotic, Penicillin and Streptomycin

Unit-III Industrial production of Vitamin (Vitamin B_{12} and Riboflavin), enzyme (amylase) and amino acids (L-lysine)

Unit-IV Importance of microorganism in bakery and dairy industries

Unit-V Microbial cells as fermentation products (Baker's yeast, legume inoculants, mushrooms and algae) and its applications.

Books:

Industrial Microbiology – Waites, Morgan, Rockey, Higton
Industrial Microbiology – L. E. Casida
Industrial Biotechnology – A. Cruger
Fermentation Technology – Ashok Pandey

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The practical work will be based on the prescribed syllabus in theory

1. To determine the pH of different fruits juices
2. Detection of number of bacteria in milk
3. Determination of quality of a milk sample
4. Microbial examination of foods
5. Immobilization of enzymes
6. Isolation of antibiotic producing microbes

Practical Books

1. Practical Microbiology: RS Gaud and GD Gupta
3. Practical Microbiology: RC Dubey and DK Maheshwari
2. Experimental in Microbiology, Plant Pathology and Biotechnology: KR Aneja

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Subject **Foundation Course** (आधार पाठ्यक्रम)
Paper: नैतिक मूल्य और भाषा **(Moral Values & Languages)**
Code: FC 605

Unit – 1	नैतिक मूल्य 1ण सत्य क साथमेरेप्रयोग (महात्मा गांधी की आत्मकथाकासंक्षिप्त संस्करण)	
Unit – 2	हिन्दी भाषा 1. आत्मनिर्भरता (वचारिक निबंध)–पंड़ितबालकृष्ण भट्ट 2. गूलरकाफूल (एक अरण्य कथा) –कुबेरनाथराय 3. मध्यपदेष की लोककलाएं (संकलित) 4. मध्यपदेषकालोकसाहित्य (संकलित) 5. पत्र लेखन–पारूपण, टिप्पण, आदेष , परिपत्र, ज्ञापन, अनस्मारक (संकलित)	
Unit – 3	हिन्दी भाषा 1. पूछा न पात की बातआज (चिंतनपरक) –रमेषचन्द्र शाह 2. गेहूँ आरगलाब (वचारिक निबंध)–रामवक्ष बनीपरी 3. दूरभाषआरमोबाइल (संकलित) 4. मध्यपदेष की चित्रकला, मूर्तिकला एवंस्थापत्य कला (संकलित) 5. हिन्दी की शब्दसम्पदा (संकलित)	
Part – B		
Unit – 4	**English Language** 1. Stopping by Woods On a Snowy Evening : Robert Frost 2. Communication Education and Information Technology : K. Adudiopillai 3. The Gift of Magi : O Henry	
Unit 5	**English Language** Translation of a short passage From Hindi to English and English to Hindi Communication through Social media Preparation of Power point Presentation **Basic Language skills:** Correction of common errors in the sentence Structure, use of tense, Preposition, Verbs, adverbs, nouns, pronouns and articles. Short essay on a given topic, Expansion of idea and summary writing.	

Reference Book

Moral Values & Languages, Hindi Granth Academy, MP

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Subject – Foundation Course
Paper: Basics of Computer App. & Information Technology
Code: FC 606

Unit-I: PowerPoint-I
• Creating presentation using Slide master and Template in various Themes & Variants.
• Working with slides: New slide, move, copy, delete, duplicate, slide layouts, Presentation views.
• Format Menu: Font, Paragraph, Drawing & Editing.
• Printing presentation: Print slides, notes, handouts and outlines.
• Saving presentation in different file formats.

Unit-II: PowerPoint-II
• Idea of Smart Art graphics, inserting text/data using SmartArt, Converting old style presentation into new style through Smart Art.
• Inserting objects (Video, Audio, Symbol, Equation, etc.), table & excel sheets, picture, chart, photo album, shapes and Smart Art; Trimming of audio/videos.
• Connecting slides through hyperlink and action button.
• Slide sorter, slide transition and animation effects.
• Presenting the slide show: Setup Slide Show, Rehearse Timing.

Unit-III: MS Excel
• Workbook & Worksheet Fundamentals: Concept of Row, Column & Cell; Creating a new workbook through blank & template.
• Working with worksheet: Entering data into worksheet (General, Number, Currency, Date, Time, Text, Accounting, etc); Renaming, Copying, Inserting, deleting & protecting worksheet.
• Working with Row & Column (Inserting, Deleting, Pasting, Resizing & Hiding), Cell & Cell formatting, Concept of Range.
• Charts: Preparing & editing different types of Charts, Inserting trendline, Backward & forward forecasting.
• Working with formulas: Formula bar; Types of functions; Syntax & uses of the following functions: SUM, TOTAL, COUNT, AVERAGE, MAX, MIN, ROUND & IF.

Unit-IV: Internet & Web Services
• Internet: World Wide Web, Dial-up connectivity, leased line, VSAT, Broad band, WiFi, URL, Domain name, Web Browser (Internet Explorer, Firefox, Google Chrome, Opera, UC browser, etc.); Search Engine (Google, Bing, Ask, etc.); Website: Static & Dynamic; Difference between Website & Portal.
• E-mail: Account Opening, Sending & Receiving Mails, Managing Contacts & Folders.
• Basics of Networking: Types of Networks (LAN, WAN, MAN); Network Topologies (Star, Ring, Bus, Hybrid).
• Elementary idea of - Cloud Computing & Office Web Apps, Mobile Computing & Mobile Apps.

Unit-V: Cyber Ethics, Security & Privacy
• Email, Internet & Social Networking Ethics
• Types of viruses & antivirus
• Computer security issues & its protection through Firewall & antivirus

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SUGGESTING READING-

1. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY- S.K.VIJAY AND PANKAJ SINGH-BOOKS OF HINDI GRANTH ACADEMY
2. COMPUTER STUDY –PANKAJ SINGH