

**SHRI SHIVAJI SCIENCE AND ARTS COLLEGE, CHIKHLI (DIST. BULDANA)
DEPARTMENT OF MICROBIOLOGY**

B. Sc. I (SEMESTER-II)

2 S. MICROBIOLOGY

The examination shall comprise of two theory papers, one in each semester and one practical in each Semester. Each theory paper will be of 3 hours duration and carry 80 marks. The internal assessment will carry 20 marks. The following syllabi are prescribed on the basis of six lectures per week and 6 practical periods per batch per week. Each theory paper has been divided into 6 units. There shall be one question on each unit, will internal choice and for each of 12 marks and one compulsory question covering all the syllabus of semester II (08 marks).

2S MICROBIOLOGY

Microbiology, Biochemistry, Biostatistics & Computers

UNIT I: VIRUSES

- i) Discovery of viruses
- ii) Structure of viruses
- iii) Classification of viruses (LHT System)
- iv) Replication of viruses – Lytic cycle (T4), Lysogeny (Lambda phage)
- v) Cultivation of viruses – Embryo culture, Tissue culture method .
- vi) Interferon

UNIT-II: MICROBIAL CONTROL

- i) Definition and Terms- Sterilization, disinfection, Antiseptic, Sanitizer, Germicide, Microbiostatis, Antimicrobial agent.
- ii) Mechanism of cell Injury - Damage of cell wall, cell membrane, Inhibition of metabolic reactions.
- iii) Physical Control :- Temperature, osmotic pressure, Radiation, filtration.
- iv) Chemical Control – Chemistry and mode of action of halogens, heavy metals and their derivatives, Alcohols, Detergents and Gaseous Sterilization.
- v) Chemotherapeutic agents.- Definition and mode of action of penicillin , tetracycline, Norfloxacin

UNIT-III: APPLIED ASPECTS OF MICROORGANISMS IN -

- i) Agriculture – Biofertilizers & Biopesticides.
- ii) Human and Animal Health – Antibiotics, Vaccines
- iii) Industry (Food, Chemical & Pharamaceutical) – List of Microbial products (and producing organisms)
- iv) Environmental – Biodegradation and Bioleaching

UNIT-IV: BASIC BIOCHEMISTRY –

- Carbohydrates – Classification, different types of Glycosidic linkages eg- Maltose sucrose, Lactose, starch
- Lipids – Classification, concept of saturated and unsaturated fatty acids,

outline of conjugated & derived lipids

- Proteins – Classification of Amino acids, concept of peptide bond , elementary concept of protein structure.
- Nucleic acid – Purine & pyrimidine bases, nucleotides ,& nucleosides structure of DNA, structure of RNA (mRNA , tRNA, rRNA)

UNIT-V: BIOSTATISTICS

- i) Importance & application – Tabulation & Classification of data, Frequency distribution & graphical distribution of data.
- ii) Measures of central tendencies – Mean, Mode, Median & their Properties
- iii) Co relation & their linear regression – Coefficient of correlation, linear least square Fit method of regression.
- iv) Hypothesis testing- (chi square test) x2 test, t-test
 - Different models of data presentation with special reference to Biological samples.

UNIT-VI: COPUTER CONCEPTS:-

- i) Components of computer system – Hardware, input devices, CPU, output devices, Monitor, software.
- ii) Memory concept- Computer memory primary secondary memory in computers.
- iii) Window Operating systems: - Introduction graphical user interface systems, desktop menus, launching a program through start menu.
- iv) MS-Word- creating, saving operating editing, closing document, entering & editing texts.
- v) Using Internet explorer, MS power point, creating emails.

B. Sc. I (Semester – II) Microbiology Practical's 2 S. MICROBIOLOGY

- Demonstration of viruses – By Plaque formation / chick embryo cultivation.
- Effect of salt & sugar concentration, PH & Temperature on bacterial growth.
- Demonstration of Oligodynamic action (copper, silver).
- Anaerobic culture method- by anaerobic Jar method/ RCMM.
- Slide culture techniques for fungi.
- Determination of antibiotic resistance of bacteria.
- Industrial utilization of yeast for fermentation activity
- Word procession
- Use of MS-Excel
- Creating e- mail
- Use of Internet
- Statistical data Processing

- Microbiological study tour to visit Research centre/ Institutions/ Industries.

Distribution of marks for Microbiology Practical Examination:

1. Major Experiment -	15 Marks
2. Minor Experiment -	10 Marks
3. Viva Voce -	08 Marks
4. Spotting -	07 Marks
5. Tour Report-	05 Marks
5. Laboratory Journals -	05 Marks

Total - 50 Marks