

ST. XAVIER'S COLLEGE (AUTONOMOUS), KOLKATA

PAPER FORMAT & SYLLABUS FOR PG ENTRANCE 2024

Department: MICROBIOLOGY

Time of examination: 2 hours and 30 mins

Total Marks: 100

Format of Question:

30 Multiple Choice questions (3 marks each): 30x3=90

1 Long Question (10 marks): 10x1=10

❖ Syllabus

- **Introductory Microbiology, Cell biology and Genetics-**Microbial growth and nutrition. Bacterial morphology, staining and identification. Control of microbes. Eukaryotic microbes (algae, fungi, protozoa). Plasma membrane and other eukaryotic subcellular organelle-structure and function. Transport across membrane, cell cycle, cell signalling and protein secretion. Mendelian, post Mendelian and microbial genetics.
- **Agricultural, Environmental, Food, Industrial, and Medical Microbiology-** Soil microbiology, biogeochemical cycles, plant pathology. Microbiology of air and water. Microbial flora of fresh food (meats, milk etc.). microbial spoilage of food, preservation of food, fermented foods, techniques for food analysis, food sanitation and control. Basics of Industrial Microbiology, industrial production of ethyl alcohol, wine, beer, vitamins, antibiotics. Normal microflora of human being, host- pathogen interaction, microbial disease and toxins. Basic immunology- types of immunity, immunoglobulin- structure and function, antigen-antibody Interaction. Vaccine and Vaccination. Virology- General characteristics and structural components of virus, lytic cycle of T odd and even bacteriophages and lysogenic cycle of lambda phage, oncogenic and animal virus.
- **Biochemistry and Molecular biology-** Biochemistry of biomolecules like carbohydrates, amino acid and proteins, nucleic acid, lipids, and vitamins, stereochemistry, enzymology, bioenergetics, biological application of thermodynamics and chemical kinetics, bioanalytical techniques viz. HPLC, TLC, gel electrophoresis, microbial metabolism, Prokaryotic and eukaryotic replication, transcription and translation, prokaryotic gene regulation, Recombinant DNA Technology and gene therapy, mutation and repair, transposons.