

DEPARTMENT OF BIOTECHNOLOGY

ODD SEMESTER

MICRO BIOLOGY (SBANA)-SESSION PLAN

SESSION NO	TOPICS TO BE COVERED	TEACHING METHOD
UNIT-I		
1&2	Orientation Program	BB
3	Syllabus & topic discussion	BB
4	Bacteria- Introduction, Structure of E coli ,Chemical composition of cell wall, Differentiate gram positive and negative bacteria, Reproduction Process of bacteria	PPT
5	Fungi -General Features of Fungi, Classification, Structure, Yeast cell reproduction,	BB
6	Algae-General Features of Algae, Structure , Classification, Pigments of Algae, Reproduction of algae	BB
7	Protozoa -Structure and Classification, Viruse- Structure, Types of viruse, Recombination ,Transduction process of viruses, Structure of T ₄ bacteriophage	BB
8	Media and culture- Sterilization methods, Aseptic methods, Cleaning of glasswares, Media Preparation-Components of media, Different types of media, Advantages of media	BB
9	Media Preparation-Components of media, Different types of media, Advantages of media	BB
10	Revision of unit-I	Group discussion
UNIT-II		
11	Classifications of microbes-DNA analysis experimental evidence	BB

12	Classifications of microbes-,Ribosomal RNA analysis experimental evidence, Ribosomal RNA sequencing	BB
13	Molecular taxonomy –Phylogenetic analysis, Phylogenetic tree, Molecular Markers, RFLP,RAPD	BB
14	Methods of microbial identification-Identification methods, Genotypic, Phenotypic &Genetic identification Methods,	PPT
15	Staining Techniques-Gram Staining, Simple Staining, Capsule Staining, Spore Staining	BB
16	Revision of unit-II	BB
CIA TEST-I		
UNIT-III		
17	Environmental Microbiology-Introduction, Diversity, Microbial Habitats, Symbiotic Microbes ,Biogeochemical Cycles, Nitrogen Cycle	BB
18	Role of microorganism in the productivity of ecosystems-The Role of Microbes on the Earth	BB
19	Microbes and Nutrient Cycles, The Carbon Cycle, NITROGEN FIXATION SYMBIOSIS-Symbiotic and non Symbiotic	BB
20	Role of microorganisms in food production -Food intoxicification, Botulism, Fermentation Process aerobic and anaerobic ,Food Preservation methods, Chemicals involved in food Processing	BB
21	Dairy and non-dairy products-Introduction, Examples of Dairy Products, Types of preservatives	BB
22	Cheese production-Coagulation, , Pasturisation, Whey Separation, Non Dairy Products Production-Fermentation, Pickling,	BB
23	Non Dairy Products Production- Examples of non Dairy Products Fermentation, Pickling, Types of preservatives	BB
24	Fermented foods -Introduction, Classification, Bread making process, Bakers Yeast production, Sauerkraut making process	BB

25	Beverages-Brewing process, Beer Production Steps, Mashing process, Types of beer, Wine-Types, making process, Health benefits, Distillation Process	BB
26	Single cell Protein-Introduction, Microbes used as SCP, Advantages of SCP, Spirulina Production process-Open & Closed pond Systems, Photobioreactor, Advantages Of Scp	BB
27	Biofuel.- Ethanol Production-Raw materials (Starchy, Sugary materials) Organisms involved in production, Fermentation, Flotulation, Distillation, Recovery, Stillage, Advantages of ethanol	PPT
28	Revision of unit-III	BB
CIA TEST-II		
UNIT-IV		
29	Medical microbiology-Introduction, Techniques, Antibiotic Sucebtability testing, Microbes in life	BB
30	Pathogenic microbes- Introduction, Bacteria, Virus, Fungi, Protozoa	BB
31	Bacterial disease- Causes, examples of diseases, Respiratory related disease, Sexually transmitted disease, Preventive methods, Antibiotics	BB
32	Viral disease- Causes, examples of diseases, Explain Hepatitis and Rabies, Preventive methods, Antibiotics	BB
33	Fungal disease- Causes, examples of diseases, Explain Skin related disease, Preventive methods, Antibiotics	BB
34	Protozoan diseases. Cure, control and Prevention, Examples of Diseases & Pharmaceuticals	Group discussion
35	Antibiotics-Definition, Examples of Antibiotics, Streptomycin Production-Submerged Process, Medium composition, Purification and recovery	BB

36	Vaccines –Definitions, Types of vaccines, Recombinant vaccines, Live vaccines, Production of vaccine, Immunization Schedule	BB
37	Biofertilizers(BGA)-Definition, History, Microbial inoculants, classification, Production, Media and requirements, Applications in a field	PPT
38	Biopesticides-Introduction, Major classes of pesticides, Large Scale production of biopesticides, <i>Bacillus thuringiensis</i> Production, Advantages &disadvantages	BB
39	Biopolymers-Definition, Types, Biorenewable Polymeric biomaterials, Biodegradable polymers, Advantages & Didadvantages	PBT
41	Biosurfactants-Structure, Properties, Classification, Biosurfactant Producers, Production, Raw materials, Recovery, Advantages & Didadvantages	BB
42	Revision of unit-IV	Group discussion
CIA TEST-III		
UNIT-V		
43	Industrial use of microbes-Introduction, Applications, <i>Saccharomyces cerevisiae</i> ,	BB
44	Fermentation products-Definition, Vaccines , Antibiotics, Biofertilizer, Biopesticides,	BB
45	Fermentation products-Definition, Fermented non fermented foods, Alcoholic beverages	BB
46	Bioconversions-Oxidation, Dehydrogenation, Reduction, Hydrolytic Reaction, Condensation, Aeration, Agitation	BB
47	Products of industrial microbiology- Vaccines , Antibiotics, Biofertilizer, Biopesticides, Advantages &Disadvantages	BB
48	Products of industrial microbiology- Fermented non fermented foods, Alcoholic beverages, Advantages &Disadvantages	BB

49	Streptomyces-Taxonomy, Morphology, Development of Antibiotics, Economic importance, Submerged process of production	BB
50	Production of Streptomycin-Raw materials, Fermentation, Recovery and Preservation	PPT
51	Yeasts-Introduction, Ecology, Reproduction, Importance of yeast, beneficial of yeast	BB
51	Saccharomyces-Introduction, Ecology, Baking, Brewing, Applications	BB
52	Hansenula- Introduction, Ecology, Applications and economic importance	BB
53	Spirulina - Introduction, Microbes used as SCP, Advantages of SCP, Spirulina Production process-Open & Closed pond Systems, Photobioreactor, Advantages Of Scp	BB
54	Penicillin- Raw materials, Fermentation, Recovery and Preservation, Applications	BB
55	Revision of unit-V	Group discussion
Revision		
56	Revision of unit—I	BB
57	Revision of unit- II	BB
58	Revision of unit-III	BB
59	Revision of unit-IV	BB
60	Revision of unit-V	BB
MODEL EXAM		

Prepared By	Approved By
Dr.Antony Teresa K.infanta	Dr.N.Santhi

