Course: Discipline Specific Core

Semester ____	6
Paper Number	HMBCR6132T/P
Paper Title	**Medical Microbiology**
No. of Credits	6 (Th:4, Pr:2)
Theory/Composite	Composite
No. of periods assigned	Th: 4 Pr: 3
Course description/objective	1. To illustrate the host pathogen interaction during pathogenesis. 2. Detailed knowledge of bacterial, viral and fungal diseases. 3. Therapy and prevention of disease.
Reading/Reference Lists	1. Ananthanarayan R. and Paniker C.K.J. (2009) Textbook of Microbiology. 8th edition, University Press Publication 2. Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. (2013) Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication 3. Goering R., Dockrell H., Zuckerman M. and Wakelin D. (2007) Mims' Medical Microbiology. 4th edition. Elsevier 4. Willey JM, Sherwood LM, and Woolverton CJ. (2013) Prescott, Harley and Klein's Microbiology. 9th edition. McGraw Hill Higher Education 5. Madigan MT, Martinko JM, Dunlap PV and Clark DP. (2014). Brock Biology of Microorganisms. 14th edition. Pearson International Edition **6.**Mims medical microbiology
Evaluation	CIA: 20 End-Sem: 80 (Th:50 and Pr:30) Question paper format of Th paper (Mod 1: 20 Mod 2: 30 Marks) Module 1 with 20 marks: Objective questions 4 marks (4 questions out of 6) 2 questions of 8 marks each (2 questions out of 3) Module 2 with 30 marks: Objective questions 6 marks (6 questions out of 8) 3 questions of 8 marks each (3 questions out of 4)

C-13: MEDICAL MICROBIOLOGY (THEORY)
SEMESTER –VI

HMBCR6132T

TOTAL HOURS: 52 **CREDITS: 4**
Module 1 **Marks 20**

Unit 1 Normal microflora of the human body and host pathogen interaction
No. of Hours: 11

Normal microflora of the human body: Importance of normal microflora, normal microflora of skin, throat, gastrointestinal tract, urogenital tract
Host pathogen interaction: Definitions - Infection, Invasion, Pathogen, Pathogenicity, Virulence, Toxigenicity, Carriers and their types, Opportunistic infections, Nosocomial infections. Transmission of infection, Pathophysiologic effects of LPS

Unit 2 Antimicrobial agents: General characteristics and mode of action **No. of Hours: 11**
Antibacterial agents: Five modes of action with one example each: Inhibitor of nucleic acid synthesis; Inhibitor of cell wall synthesis; Inhibitor of cell membrane function; Inhibitor of protein synthesis; Inhibitor of metabolism
Antifungal agents: Mechanism of action of Amphotericin B, Griseofulvin
Antiviral agents: Mechanism of action of Amantadine, Acyclovir, Azidothymidine
Antibiotic resistance, MDR, XDR, MRSA, NDM-1

Module 2 **Marks 30**

Unit 3 Bacterial diseases **No. of Hours: 12**
List of diseases of various organ systems and their causative agents. The following diseases in detail with Symptoms, mode of transmission, prophylaxis and control; Respiratory Diseases: *Streptococcus pyogenes*, *Haemophilus influenzae, Mycobacterium tuberculosis;* Gastrointestinal Diseases: *Escherichia coli*, *Salmonella typhi*, *Vibrio cholerae*, *Helicobacter pylori;* Others: *Staphylococcus aureus, Bacillus anthracis, Clostridium tetani*, *Treponema pallidum, Clostridium difficie*

Unit 4 Viral diseases **No. of Hours: 8**
List of diseases of various organ systems and their causative agents. The following diseases in detail with Symptoms, mode of transmission, prophylaxis and control; Polio, Herpes, Hepatitis, Rabies, Dengue, AIDS, Influenza with brief description of swine flu, Ebola, Chikungunya, Japanese Encephalitis

Unit 5 Fungal diseases **No. of Hours: 6**
Brief description of each of the following types of mycoses and one representative disease to be studied with respect to transmission, symptoms and prevention; Cutaneous mycoses: Tinea pedis (Athlete's foot); Systemic mycoses: Histoplasmosis; Opportunistic mycoses: Candidiasis

Unit 6 Protozoan diseases **No. of Hours:4**

List of diseases of various organ systems and their causative agents. The following diseases in detail with symptoms, mode of transmission, prophylaxis and control, Malaria, Kala-azar.

C-13: MEDICAL MICROBIOLOGY (PRACTICAL)
SEMESTER –VI

HMBCR6132P

TOTAL HOURS: 39 **CREDITS: 2**

1. Identify bacteria (any three of *E. coli, Salmonella, Pseudomonas, Staphylococcus, Bacillus*) using laboratory strains on the basis of cultural, morphological and biochemical characteristics: IMViC, TSI, nitrate reduction, urease production and catalase tests
2. Study of composition and use of important differential media for identification of bacteria: EMB Agar, McConkey agar, Mannitol salt agar, Deoxycholate citrate agar, TCBS
3. Study of bacterial flora of skin by swab method
4. Perform antibacterial sensitivity by Kirby-Bauer method
5. Determination of minimal inhibitory concentration (MIC) of an antibiotic.
6. Study symptoms of the diseases with the help of photographs: Polio, anthrax, herpes, chicken pox, HPV warts, AIDS (candidiasis), dermatomycoses (ring worms)
7. Study of various stages of malarial parasite in RBCs using permanent mounts and with diazonium dye test.