

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020–2021 onwards)
B.Sc. MICROBIOLOGY II Year
SEMESTER – III

MEDICAL MICROBIOLOGY & BASICS OF IMMUNOLOGY
(PAPER – III: Discipline Specific Course)

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)
Practical: 3 Hours/Week Credits: 1 Marks: 25

UNIT – I: MEDICAL BACTERIOLOGY

1. History of Medical Microbiology. Normal flora of human body.
2. Host pathogen interactions. Bacterial toxins, virulence and attenuation. Antimicrobial resistance. Air-borne diseases –Tuberculosis. Food and water-borne diseases - Cholera, Typhoid.
3. Contact diseases - Syphilis, Gonorrhoea. General account of nosocomial infections.

UNIT – II: MEDICAL VIROLOGY AND PARASITOLOGY

1. Air borne diseases – Influenza. Food and water-borne diseases – Poliomyelitis, Amoebiasis.
2. Insect-borne diseases - Malaria, Dengue fever. Zoonotic diseases – Rabies
3. Viral diseases - Hepatitis B, HIV, SARS, MERS;

UNIT-III: INTRODUCTION OF IMMUNOLOGY

1. History of Immunology, Cells and Organs of the immune system – Primary and Secondary lymphoid organs. Function of B and T lymphocytes. Natural Killer cells, Polymorphonuclear cells.
2. Structure and Classification of Antigens, Factors affecting antigenicity. Antibodies: Basic structure, Types of properties and functions of immunoglobulins
3. Types of Immunity: Innate and Acquired Immunity, Humoral and cell-mediated immune response.

UNIT-IV: IMMUNOLOGICAL DISORDERS AND AG-AB REACTIONS

1. Types of hyper sensitivity reactions – Immediate and delayed. Systemic and Localized autoimmune disorders. Complement pathways - Classical and Alternative pathways.
2. Types of antigen-antibody reactions – Agglutinations, Precipitation, Neutralization, Blood groups.
3. Complement fixation Test. Labeled antibody based techniques – ELISA, RIA and immunofluorescence; Polyclonal and Monoclonal antibodies production and application.

References:

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. Abbas AK, Lichtman AH, Pillai S. (2007). Cellular and Molecular Immunology. 6th edition Saunders Publication, Philadelphia.
7. Delves P, Martin S, Burton D, Roitt IM. (2006). Roitt's Essential Immunology. 11th edition Wiley-Blackwell Scientific Publication, Oxford.
8. Goldsby RA, Kindt TJ, Osborne BA. (2007). Kuby's Immunology. 6th edition W.H. Freeman and Company, New York.
9. Murphy K, Travers P, Walport M. (2008). Janeway's Immunobiology. 7th edition Garland Science Publishers, New York.
10. Peakman M, and Vergani D. (2009). Basic and Clinical Immunology. 2nd edition Churchill Livingstone Publishers, Edinburgh

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MEDICAL MICROBIOLOGY & BASICS OF IMMUNOLOGY PRACTICAL
(PAPER – III: Discipline Specific Course)

Practical: 3 Hours/Week Credits: 1 Marks: 25

1. Enumeration of RBC and WBC
2. Estimation of blood haemoglobin.
3. Determination of blood groups and Rh typing.
4. Isolation and identification of medically important bacteria by cultural, microscopic and biochemical tests.
5. Antibiotic sensitivity testing – disc diffusion method.
6. Parasites – Malarial parasite, *Entamoeba* (study of permanent slides).
7. Tests for disinfectant (Phenol coefficient).
8. Typing of human blood groups-slide agglutination
9. Estimation of hemoglobin content of human blood
10. Preparation of blood smear and different blood cell count
11. RBC count
12. WBC count
13. Differential staining of WBC by Leishman's stain
14. Widal-slide agglutination test
15. RPR card test for syphilis
16. Tridot test
17. Tube flocculation test