

Contents

	Competency Number (MCI Curriculum)	Pages
Section 1: General Microbiology, Immunology and Hospital Infection Control		
General Microbiology		
1. Introduction to Microbiology Department	MI 1.1	3
2. Microscopy	MI 1.1, 1.2	5
3. General Bacteriology		
3.1. Morphology and Physiology of Bacteria	MI 1.1	12
3.2. Specimen Collection and Transport	MI 8.9, 8.10	17
3.3. Direct Detection 1: Simple Staining	MI 1.1, 1.2	23
3.4. Direct Detection 2: Gram Staining	MI 1.2	25
3.5. Direct Detection 3: Special Staining (Acid-Fast Stain, Albert Stain) and Other Methods	MI 1.1, 1.2 , 8.15	28
3.6. Culture Media (Including Automated Culture) and Culture Methods	MI 1.1, 8.15	32
3.7. Identification of Bacteria (Conventional and Automated)	MI 1.1, 8.15	42
3.8. Antimicrobial Susceptibility Test	MI 1.6	49
3.9. Molecular Diagnosis	MI 8.15	56
4. Laboratory Diagnosis of Viral Diseases	MI 1.1, 8.10 , 8.15	59
5. Laboratory Diagnosis of Parasitic Diseases	MI 1.2 , 8.10 , 8.15	68
6. Laboratory Diagnosis of Fungal Diseases	MI 1.1, 8.10 , 8.15	74
Immunology		
7. Precipitation and Agglutination	MI 8.15	77
8. ELISA, ELFA and Immunofluorescence	MI 8.15	83
9. Western Blot, Rapid Tests and CLIA	MI 8.15	88
Hospital Infection control		
10. Standard Precautions: Hand hygiene and PPE	MI 8.7	92
11. Transmission-based Precautions	MI 8.6, 8.7	101
12. Sterilization and Disinfection	MI 1.5	108
13. Biomedical Waste Management	MI 8.6	117
14. Needle Stick Injury	MI 8.6, 8.7	121
15. Environmental Surveillance	MI 8.8	125

Note: Competency numbers **highlighted bold** are skill based competencies.

Section 2: Systemic Microbiology (Infectious Diseases)

Bloodstream and Cardiovascular System Infections

16. Cardiovascular System Infections: Infective Endocarditis and Acute Rheumatic Fever	MI 2.3	133
17. Bloodstream Infections	MI 2.3 , 8.15	138
18. Bacterial Infections of Bloodstream: Enteric Fever, Scrub Typhus, Brucellosis, and Leptospirosis	MI 3.4 , 8.10 , 8.15	142
19. Viral Infections of Bloodstream: HIV/AIDS and Dengue	MI 2.7, 8.15	153
20. Parasitic Infections of Bloodstream: Malaria, Visceral Leishmaniasis and Lymphatic Filariasis	MI 2.6	162
21. Fungal Infections of Bloodstream: Systemic Candidiasis and Systemic Mycoses	MI 1.1, 8.15	172

Gastrointestinal Infections

22. Bacterial Diarrhea: Shigellosis, Cholera and Others	MI 3.2	176
23. Viral Gastroenteritis: Rotaviruses and Others	MI 3.2	184
24. Intestinal Protozoan Infections: Intestinal Amoebiasis, Giardiasis and Coccidian Parasitic Infections	MI 1.2 , 3.2 , 8.15	186
25. Intestinal Helminthic Infections	MI 1.2 , 3.2 , 8.15	192
<ul style="list-style-type: none"> • Intestinal Cestode Infections: Intestinal Taeniasis, Hymenolepiasis and Others • Intestinal Trematode Infections: <i>Fasciolopsis buski</i>, <i>Schistosoma mansoni</i> and Others • Intestinal Nematode Infections: Trichuriasis, Enterobiasis, Ascariasis, Hookworm Infection, Strongyloidiasis 		

Hepatobiliary System Infections

26. Viral Hepatitis	MI 3.8	203
27. Parasitic Infections of Hepatobiliary System: Amoebic Liver Abscess, Hydatid Disease and Others	MI 3.1, 3.2	208

Skin, Soft Tissue and Musculoskeletal System Infections

28. Staphylococcal Infections	MI 4.2, 4.3, 1.2	211
29. Beta-hemolytic Streptococcal Infections	MI 4.3, 1.2	215
30. Miscellaneous Bacterial Infections of Skin and Soft Tissues: Anaerobic Infections including Gas Gangrene, Leprosy and Anthrax	MI 4.3, 1.2 , 8.10 , 8.15	220
31. Viral Exanthems and Other Cutaneous Viral Infections: Herpes Simplex, Measles, Rubella and Others	MI 4.3, 8.10 , 8.15	227
32. Superficial and Subcutaneous Fungal Infections	MI 4.3, 8.10 , 8.15	236

Respiratory Tract Infections

33. Bacterial Pharyngitis: <i>Streptococcus pyogenes</i> Pharyngitis and Diphtheria	MI 6.2, 8.10 , 8.15	243
---	----------------------------	------------

Note: Competency numbers **highlighted bold** are skill based competencies.

34. Bacterial Pneumonia: Pneumococcal Pneumonia, <i>Haemophilus influenzae</i> Pneumonia, <i>Klebsiella pneumoniae</i> Pneumonia and Others	MI 6.3, 1.2, 8.10 , 8.15	250
35. Tuberculosis	MI 6.3 , 8.15	260
36. <i>Pseudomonas</i> and <i>Acinetobacter</i> Infections	MI 6.3	268
37. Viral Infections of Respiratory Tract: Influenza, COVID-19, Infectious Mononucleosis, and Others	MI 6.2, 6.3	272
38. Parasitic and Fungal Infections of Respiratory Tract: Paragonimiasis, Zygomycosis, Aspergillosis, Pneumocystosis and Others	MI 6.2, 6.3	281
Central Nervous System Infections		
39. Bacterial Meningitis	MI 5.3, 1.2, 8.10 , 8.15	288
40. Viral Meningitis and Viral Encephalitis (Enteroviruses including Polio, Rabies, Japanese Encephalitis and Others)	MI 1.1, 5.3 , 8.15	295
41. Parasitic and Fungal Infections of Central Nervous System: Neurocysticercosis, Free-living Amoebae Infections, Toxoplasmosis, Cryptococcal Meningitis and Others	MI 1.1, 5.1, 5.3 , 8.15	302
Urogenital Tract Infections		
42. Urinary Tract Infections	MI 7.3, 8.10, 8.15	307
43. Infective Syndromes of Genital Tract (Sexually-transmitted Infections) : Syphilis, Gonorrhoea, Non-gonococcal Urethritis (<i>Chlamydia trachomatis</i>), Vulvovaginitis (Trichomoniasis, Vaginal Candidiasis) and Others	MI 7.1, 7.2, 8.10 , 8.15	316
Miscellaneous		
44. AETCOM in Microbiology	MI 8.11, 8.14	324
45. University Practical Examination		330
<i>Index</i>		333

Note: Competency numbers **highlighted bold** are skill based competencies.

Further Reading

1. Bailey & Scott's Diagnostic Microbiology, 14th Edition.
2. Harrison's Principles of Internal Medicine, 20th Edition.
3. Indian Council of Medical Research, New Delhi, India.
4. Jawetz Melnick and Adelbergs' Medical Microbiology, 28th Edition.
5. Koneman's Color Atlas and Textbook of Diagnostic Microbiology, 7th Edition.
6. Kuby's Immunology, 8th Edition.
7. Mackie and McCartney's Practical Medical Microbiology, 14th Edition.
8. National AIDS Control Organisation (NACO), India.
9. Revised National Tuberculosis Control Program (RNTCP), India.
10. Garcia's Diagnostic Medical Parasitology, 6th edition.
11. Various national and international journals and other internet sources.
12. World Health Organization (WHO).
13. Centers for Disease Control and Prevention, Atlanta, USA.