BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI - 620 024

Diploma in Clinical Microbiology

(For the candidates to be admitted from the academic year 2006-2007 onwards)

Semester	Title of the Paper	Exam Hours	University Exam Marks
I	Paper I– Human Anatomy and Microbial Interactions	3	100
	Paper II – Clinical Bacteriology	3	100
	Paper III – Lab in Human Anatomy and Laboratory Clinical Microbiology	3	100
II	Paper IV – Clinical Mycology and Virology	3	100
	Paper V – Clinical Parasitology	3	100
	Paper VI – Lab in Mycology, Virology and Parasitology	3	100
	TOTAL MARKS		**600**

PAPER I – HUMAN ANATOMY AND MICROBIAL INTERACTIONS

Unit I

Anatomy of skin, Respiratory track, Gastrointestinal tract, Genitourinary system – General Structure and Physiology. Cardio Vascular System, Central Nervous System.

Unit II

Anatomy and Physiological process of Human beings – Circulatory System, Nervous System, Lymphoid System, Cells of Immune System.

Unit III

Non-specific and specific Defense mechanism of Human, Normal flora of healthy human host, Host microbe interaction.

Unit IV

Epidemiology of Infectious disease, A brief account on biology of immune system and role of vaccination – Immunization schedule.

Unit V

Laboratory rules and regulation to handle various pathogenic strains of Bacteria, Fungi and Protozoa. Microscopes used for Laboratory investigation, Staining and Serological methods, Universal precaution, HIV.

Reference:

1. Kathleen Talaro, Arthur Talaro. Foundations in Microbiology, 2nd Ed., W.M.C. Brown Publishers Chigago, 1996.
2. Lansing M.Prescott, John P.Harley, Donald A.Klein. Microbiology, 4th Ed & 5th Ed, W.C.B. McGraw Hill, 1999, 2001.
3. Ronald M.Atlas, Principles of Microbiology, 2nd Ed., Wm.C.Brown Publishers, 1977.
4. Tortora. J., Funke.R. Case L. Microbiology an Introduction. 6th Ed. Addition Wesley Longman 1997.

PAPER II – CLINICAL BACTERIOLOGY

Unit I

Historical development in Bacteriology, Classification of Pathogenic bacteria, General methods of isolation and identification of pathogenic bacteria.

Unit II

Infections associated with following Gram-positive bacteria – Bacillus anthracis. Clostridium, Pneumococcus, Corynebacterium, Streptococcal infections, Staphylococcal infections.

Unit III

Infections associated with following Gram-negative bacteria – Enterobacteriaceae – Salmonella, Shigella, Klebsiella, Proteus, Yersinia and Escheichia. Vibrio, Pseudomonas, Neisseria, Haemophilus, Campylobacter, Bordetella, Brucella.

Unit IV

Infections associated with Mycoplasma, Mycobacterium tuberculosis and Mycobacterium leprae. Spirochetes – Treponema, Borrelia and Leptospira. Actinomycetes. Rickettsiae and Chlamydiae.

Unit V

Nosocomial infections and Zoonotic diseases, Sterilization, disinfection and antimicrobial agents, culturing Techniques and sensitivity Testing; MPN count for water Quality.

Reference:

1. Moselio Schaechter, Cary Engleberg, N.Barry I. Eisenstein, Gerald medoff. Mechanisms of microbial disease, 3rd ed, Lippincott Williams & Wilkins, 1999.
2. Ananthanarayan and Jayaram Paniker. Textbook of Microbiology, 4th ed. Orient Longman, 2000.
3. Mandel, G.L. Bennet, J.E. and Dolin, R. 1995. Principles and practice of infectious disease. 4th edi. Churchil Living stone. New York.

PAPER III – LAB IN HUMAN ANATOMY AND LABORATORY CLINICAL MICROBIOLOGY

1. Laboratory Rules and Regulations.
2. Isolation of Bacteria from Pus, Sputum, Blood, Stool and Urine – Using Selective and Differential medium.
3. Various microscopic methods to assess the morphology of bacteria.
4. Serogrouping of Bacteria.
5. Identification of different Gram – negative bacteria.
6. Identification of different Gram-positive bacteria.
7. Antibiotic sensitivity assay – Disc Diffusion method.
8. Assessing Minimum Inhibitory Concentrations.
9. Precipitation Techniques.
10. Agglutination Techniques
11. ELISA
12. PCR
13. Application of DNA probes for diagnosis
14. Immuno Electrophorosis.

PAPER IV – CLINICAL MYCOLOGY AND VIROLOGY

Unit I

Classification of Medically important fungi. General identification process of medically important fungi.

Unit II

Detailed study about etiology, Lab diagnosis, Pathogenesis and Treatment of Superficial, Subcutaneous, Systemic mycoses of human.

Unit III

Classification of animal viruses. Isolation, Identification, Cultivation and Purification of animal viruses. Antiviral chemotherapy. Viral Zoonotic infection. Viral vaccines. Interferons.

Unit IV

DNA viruses- Poxvirus, Herpes virus, Adeno virus, Hepatitis B virus.

Unit V

RNA viruses – Retrovirus, Picorna virus, Reo virus, Herpes virus, Rhabdo virus, Toga virus, Paramyxo virus.

Reference:

1. Richman, Whitley, Hayden. Clinical virology. Churchill Livingstone, New York. 1997.
2. David. M.Knipe & Peter M.Harley. Fundamental Virology, 4th Ed., Lippincott Williams & Wilkins, 2001.
3. S.J. Flint Enguist, L.W. Krug RM, Racaniello V.R., A.M.Skalka. Principles of Virology, A.S.M. Press, Wasington, 2000.

PAPER V – CLINICAL PARASITOLOGY

Unit I

Classification and Brief history of Protozoa and helminthic infections – mechanism of disease production by parasites.

Unit II

Etiology, Pathogenesis, Clinical diagnosis of following protozoans – Entamoeba histolytica, Giardia lamblia, Trypanosoma, Leishmania, Trichomonas, Balantidium, Plasmodium, Toxoplasma, Isospora, Cryptosporidium.

Unit III

Etiology, Pathogenesis, Clinical diagnosis of following Nematodes – Trichonella, Trichuris, Ancyclostoma, Enterobius, Dracunolous, Wucheria bancrofti, Brugia, Loa loa.

Unit IV

Etiology, Pathogenesis, Clinical diagnosis of following Cestodes – Tinea, Diphyllobottrium, Cysticercus, Echinococcus.

Unit V

Etiology, Pathogenesis, Clinical diagnosis of following Tremtodes – Schistosoma, Medical entomology.

Reference:

1. Moselio Schaechter, Cary Engleberg, N.Barry I. Eisenstein, Gerald medoff. Mechanisms of microbial disease, 3rd Ed, Lippincott Williams & Wilkins, 1999.
2. Samuel Baron. Medical Microbiology, 2nd Ed, Addison – Wesley Publication & Co., New York. 1986.

PAPER VI – LAB IN MYCOLOGY, VIROLOGY AND PARASITOLOGY

1. Sample collection procedures for common fungal infections.
2. Fungal KOH mount.
3. Lacto phenol Cotton Blue Test.
4. Germ Tube Test
5. Common methods for isolation of common laboratory fungi.
6. Slide culture technique.
7. Identification of some pathogenic fungi.
8. Giemsa Staining.
9. Leishman Staining.
10. Iodine and Saline wet mount.
11. Concentration technique to examine stool parasite.
12. Identification of common Protozoa, Nematodes and Trematodes.
13. Haemagglution inhibition Test.

Reference:

1. Murray, P.R.1995. Manual of Clinical Microbiology 6th ed. ASM Press. Washington DC.
2. Monica chesbrough. Medical laboratory manual for Tropical Countries, Educational low priced books scheme, Volume II, 1984.
3. Lennette HE, Balows A, Hauser WJ et al. Collection, Handling and Processing of Specimen. In Manual of Clinical Microbiology, 4th Ed., ASM Washington, DC, 73-98, 1985.
4. McGinnis M.R. Laboratory handbook of medical mycology. Academic Press, New York, 1980.
5. Callaway C.J. and L.D. Haley. Laboratory methods in Medical mycology 4th ed. Centres for Disease Control. Atlanta, Ga. 1978.
6. Koneman, E.W., G.D. Roberts and S.F. Wright: Practical laboratory mycology 2nd Ed. The Williams and Wilkins Co. Baltimore 1978.

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