

Course: MICROBIOLOGY PG

Semester	2
Paper Number	MMCB4214
Paper Title	IMMUNOLOGY & CANCER BIOLOGY
No of credits	6
Non composite/composite	Composite
No. of periods assigned	6
Course description/objective	<ul style="list-style-type: none"> • To characterize immunological processes • To know immunological techniques • To know the process of carcinogenesis
Reference List	<p>Kuby Immunology, Kindt, Goldsby, Osborne. Roitt's Essential Immunology (Essentials) by Seamus J. Martin (Author)</p> <p>Dennis R. Burton (Author), Ivan M. Roitt (Author), Peter J. Delves</p> <p>The biology of Cancer. Robert A Weinberg. Molecular Biology of Cancer, Mechanisms Targets And Therapeutics Edition 2006 by Pecorino L, Oxford University Pres</p>
Evaluation	<p>Theory: 70 (60 End sem + 10 CIA)</p> <p>Practical: 30 (10 End sem + 20 CIA)</p> <p>Question Paper format:</p> <p><u>Theory: End sem 60 marks</u></p> <p>Module 1: 30 marks</p> <p>3 questions form 5 (10x3=30)</p> <p>Module 2: 30 marks</p> <p>3 questions form 5 (10x3=30)</p> <p>Viva: End sem 10 marks</p>

IMMUNOLOGY & CANCER BIOLOGY

THEORY 70

❖ MODULE 1

Basic Immunology (35 MARKS)

Immune cells, MHC, VDJ recombination

Immune cells, PAMPS and PRRs (Toll like receptors); complement system.MHC/HLA; Antigen-processing and presentation.T-Cells: maturation, activation and differentiation, T-cell-Receptors B-cells: maturation, activation and differentiation.Antigens and antibodies.Organization and expression of Ig genes; VDJ recombination, Class switching. Cytokines; Hypersensitivity; Autoimmunity, Vaccination, Transplantation Immunology, immunodeficiencies (KS)

❖ MODULE 2:

Immunological techniques and cancer biology (35 MARKS)

Immunological techniques: Antibody generation, Antibody isolation and purification, Hybridoma technique, ELISA, ELISPOT, surface plasmon resonance, radioimmunoassay, Immunoblotting, Fluorescent Immunoassay (FIA) and Chemiluminescence Immunoassay (CLIA), Immunohistochemistry, Immunoprecipitation, Immune cell isolation, Lymphocyte Count from Blood (KS)

Cancer biology: Classification and Nomenclature, Signs and symptoms, Causes of cancer: Chemical carcinogens , Ionizing radiation , Infectious diseases, Hormonal imbalances, Immune system dysfunction, Heredity, Other causes. Pathophysiology of cancer: Epigenetics, Oncogenes, Tumor suppressor genes, cell signalling and cancer. Cancer cell biology: Clonal evolution, Biological properties of cancer cell. Therapeutics: Antiangiogenesis, immunotherapy,

PRACTICAL: 30 MARKS

1. ELISA
2. Western blot,
3. Separation of IgG by column chromatography
4. Lymphocyte Count from Blood

Reference:

1. Kuby Immunology, Kindt, Goldsby, Osborne.
2. Roitt's Essential Immunology (Essentials) by Seamus J. Martin (Author), Dennis R. Burton (Author), Ivan M. Roitt (Author), Peter J. Delves
3. The biology of Cancer. Robert A Weinberg.
4. Molecular Biology of Cancer, Mechanisms Targets And Therapeutics Edition 2006 by Pecorino L, Oxford University Press