Biochemistry year 2

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/ S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Enzyme		**Number of learning objectives : (03)**					
BI2.2	Observe the estimation of SGOT & SGPT	K	K	Demonstration	Viva voce		
BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.	K	KH	Lecture, Small group discussion	Written/Viva voce	Pathology, General Medicine	
BI2.6	Discuss use of enzymes in laboratory investigations (Enzyme-based assays)	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pathology, General Medicine	
BI2.7	Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.	K	KH	Lecture, Small group discussion, DOAP sessions	Written/ Viva voce	Pathology, General Medicine	

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/SH/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Chemistry and Metabolism of Carbohydrates			**Number of learning objectives : (06)**				
BI3.4	Define and differentiate the pathways of carbohydrate metabolism, (glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt).	K	KH	Lecture, Small group discussion	Written/Viva voce	General Medicine	
BI3.5	Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders.	K	KH	Lecture, Small group discussion	Written/Viva voce	General Medicine	
BI3.6	Describe and discuss the concept of TCA cycle as a amphibolic pathway and its regulation.	K	KH	Lecture, Small group discussion	Written/Viva voce		
BI3.7	Describe the common poisons that inhibit crucial enzymes of carbohydrate metabolism (eg; fluoride, arsenate)	K	KH	Lecture, Small group discussion	Written/Viva voce		Physiology
BI3.8	Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates.	K	KH	Lecture, Small group discussion	Written/Viva voce	Pathology, General Medicine	
BI3.9	Discuss the mechanism and significance of blood glucose regulation in health and disease.	K	KH	Lecture, Small group discussion	Written/Viva voce	General Medicine	

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Chemistry and Metabolism of Lipids			**Number of learning objectives : (02)**				
BI4.5	Interpret laboratory results of analytes associated with metabolism of lipids	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	
BI4.7	Interpret laboratory results of analytes associated with metabolism of lipids.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Chemistry and Metabolism of Proteins			**Number of learning objectives : (02)**				
BI5.4	Describe common disorders associated with protein metabolism.	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pediatrics	
BI5.5	Interpret laboratory results of analytes associated with metabolism of proteins.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Metabolism and homeostasis			**Number of learning objectives : (09)**				
BI6.1	Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/ S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
BI6.2	Describe and discuss the metabolic processes in which nucleotides are involved.	K	KH	Lecture, Small group discussion	Written/ Viva voce		
BI6.3	Describe the common disorders associated with nucleotide metabolism.	K	KH	Lecture, Small group discussion	Written/ Viva voce		Physiology
BI6.4	Discuss the laboratory results of analytes associated with gout & Lesch Nyhan syndrome.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	
BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	
BI6.10	Enumerate and describe the disorders associated with mineral metabolism.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	
BI6.11	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pathology, General Medicine	Physiology
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pathology, General Medicine	Physiology, Human Anatomy
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands.	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pathology, General Medicine	Physiology, Human Anatomy

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/ S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Molecular biology			**Number of learning objectives : (04)**				
BI7.3	Describe gene mutations and basic mechanism of regulation of gene expression.	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pediatrics	
BI7.5	Describe the role of xenobiotics in disease	K	KH	Lecture, Small group discussion	Written/ Viva voce		
BI7.6	Describe the anti-oxidant defence systems in the body.	K	KH	Lecture, Small group discussion	Written/ Viva voce		
BI7.7	Describe the role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine, Pathology	

Number	Learning objectives The student should be able to	Domain K/S/A/C	Level K/KH/S H/P	Suggested Teaching Learning method	Suggested Assessment method	Vertical integration	Horizontal Integration
Topic: Nutrition			**Number of learning objectives : (01)**				
BI8.1	Discuss the importance of various dietary components and explain importance of dietary fibre.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine, Pediatrics, Pathology	

Topic: Extracellular Matrix			**Number of competencies: (02)**				
BI9.1	List the functions and components of the extracellular matrix (ECM).	K	KH	Lecture, Small group discussion	Written/ Viva voce		
BI9.2	Discuss the involvement of ECM components in health and disease.	K	KH	Lecture, Small group discussion	Written/ Viva voce	General Medicine	
Topic: Oncogenesis and immunity			**Number of learning objectives : (04)**				

BI10.1	Describe the cancer initiation, promotion oncogenes & oncogene activation. Also focus on p53 & apoptosis	K	KH	Lecture, Small group discussion	Written/ Viva voce	Obstetrics & Gynaecology, General Surgery, Pathology	
BI10.2	Describe various biochemical tumor markers and the biochemical basis of cancer therapy.	K	KH	Lecture, Small group discussion	Written/ Viva voce	Obstetrics & Gynaecology, General Surgery, Pathology	
BI10.3	Describe the cellular and humoral components of the immune system & describe the types and structure of antibody	K	KH	Lecture, Small group discussion	Written/ Viva voce	Obstetrics & Gynaecology, General Surgery, Pathology	
BI10.5	Describe antigens and concepts involved in vaccine development.	K	KH	Lecture, Small group discussion	Written/ Viva voce	Pathology, Pediatrics, Microbiology	