Postgraduate PhD degree of Basic Medical Sciences in Biochemistry

Blueprint of Bioenergetics & metabolism (Advanced level) course (PhD)

Course Code: BIC604BMA, BIC609BMA, BIC610BMA

The total marks of this course are 200, divided as:

- Workplace-based assessment (40 marks)
- Written exam (160 marks), distributed as follows:

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
1-Updates of Biological oxidation - Genetic mitochondrial disorders and its relation to energy metabolism. - Clinical aspects of Respiratory chain & oxidative phosphorylation	7	10%	16	11		5	
2- Disorders of Carbohydrate metabolism: • Clinical aspects and inborn errors of carbohydrate metabolism pathways involving glycolysis, oxidative decarboxylation, Krebs cycle, gluconeogenesis, glycogen metabolism, HMP pathway and uronic acid	14 (13 theoretical + 2 practical)	20% (18.5%lecture+ 1.5% practical)	32 (29.5 lecture + 2.5 practical)	22		10	

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
pathway. • Inborn errors of mono- and di-saccharide metabolism • Glycogen storage diseases • Biochemical changes in Diabetes Mellitus							
3- Disorders of Lipid metabolism: • Clinical aspects of essential fatty acid deficiency and their metabolic disorders in humans • Diseases caused by impaired oxidation of fatty acids • Processes caused by defects in Phospholipid or sphingolipid synthesis or breakdown. • Metabolic changes observed in obesity. • The biochemical basis of different types of dyslipidemia. • coronary heart diseases & biochemical basis of myocardial infarction	15 (14 theoretical+ 2 practical)	21.5% (20% lecture + 1.5% practical)	35 (32 lecture +2.5 practical)	24		11	

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
4- Updates of Protein metabolism & inborn errors of individual amino acid metabolism • Clinical aspects of urea cycle enzymes disorder • The classical approaches and the role of tandem mass spectrometry in screening neonates for inherited metabolic diseases • Congenital disorders of amino acid metabolism	15 (14 theoretical+ 2 practical)	21.5% (20% lecture + 1.5% practical)	34 (32 lecture +2.5 practical)	24		10	
5- Nucleic acid metabolism disorders: • Disorders of purine and pyrimidine metabolism • Synthetic base analogues used in chemotherapy	5	7.2%	12	8		4	
6- Clinical aspects of Metabolic integration & Provision of metabolic fuel • Enzyme change and metabolic fuels in fed & fasting state.	9	12.6%	20	14		6	

Course content	Teaching hours	Relative weight to the total marks	Total Marks	MCQ Marks	No of exam Q (MCQ)	Short essay questions Marks	No of exam Q (short essay questions)
• Role of (liver-adipose tissue-muscle-brAn) in fed &fasting state. • Metabolic changes in (DM, pregnancy, lactation). • Metabolic pathways regulated at different levels of organization (at tissue & organ level).							
7- Heme metabolism disorders: biochemical basis of the various types of porphyria	5	7.2%	11	8		3	
Total	(67 lecture + 6 practical) = 70 hours	100%	160 (152.5 lecture + 7.5 practical)	111		49	

Head of Biochemistry & Molecular Biology Department
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