



Postgraduate MSc degree of Basic Medical Sciences in Biochemistry

Blueprint of (Bioenergetics & metabolism) course (Master) Course Code: (BIC504BM, BIC509BM, BIC510BM)

The total marks of this course are 200 marks:

- Student activity & workplace-based assessment: 40 marks
- Written assessment (MCQ + Short essay): **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)
Biological oxidation & bioenergetics. <ul style="list-style-type: none"> • laws of thermodynamics and role of high energy phosphates. • oxidoreductases and their importance in metabolism. • electron transport chain, complexes & ATP synthase enzyme. • oxidative phosphorylation and uncouplers. 	7	8.1%	13	9		4	
Chemistry and Metabolism of Carbohydrates: <ul style="list-style-type: none"> • Carbohydrates of physiological significance • Citric acid cycle • Glycolysis pathway and its control. 	18 (17 lecture+ 2 practical)	20.9% (19.8% lecture +1.1%practical)	33 (31.5 lecture + 2 practical)	23		10	



<ul style="list-style-type: none"> • Synthesis and breakdown of glycogen and its regulation • Gluconeogenesis & its regulation • Pentose phosphate pathway & its role • Uronic acid pathway • Metabolism of hexoses. 							
3-Chemistry and Metabolism of lipids: <ul style="list-style-type: none"> • Lipids of physiological significance • Fatty acid oxidation • Ketogenesis and their regulation and importance. • Fatty acid synthesis and control • Plasma lipoproteins metabolism • Cholesterol metabolism 	20 (19 lecture+ 2 practical)	23.3% (22.1% lecture +1.2% practical)	37 (35.5 lecture +1.5 practical)	26		11	
4- Metabolism of protein & individual amino acids: <ul style="list-style-type: none"> • Synthesis of nonessential amino acids. • Protein turnover, role of transaminases • Urea cycle • Catabolism of carbon skeletons of amino acids • Identify metabolic defects in their metabolism. 	16 (15 lecture + 2 practical)	18.6% (17.4% lecture +1.2% practical)	30 (28 lecture+ 2 practical)	21		9	



• Conversion of amino acids to specialized products.							
5- metabolism of vitamins, macroelements & trace elements	2	2.3%	4	3		1	
6- Purine & pyrimidine nucleotides metabolism: • Structure, synthesis, degradation pathways of nucleotides and their roles.	5	5.8%	10	7		3	
7- Porphyrin metabolism & bile pigment. • Types of jaundice • Biochemical basis of hemoglobinopathies: 1. The genetic basis of Sickle Cell disease 2. The genetic basis of Thalassemia 3. Inheritance of ABO Blood groups	13	15.1%	24	17		7	
8- Protein misfolding diseases	5	5.8%	9	6		3	
Total	(83 lecture+ 6 practical) = 86 h	100% (96.5% lecture +3.5%practical)	160 marks	112		48	

Head of Biochemistry & Molecular Biology Department
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