Shahjalal University of Science & Technology, Sylhet

Department of Biochemistry and Molecular Biology

B. Sc. (Hons) **3rd Year 1st Semester** Final Examination, 2013

Course No. : **BMB -321** Course Title: [redacted] Metabolism-II

Credit: **3.0** Total Marks: **70** Time: **3** Hours

Instructions:

- *Number in the right side indicates the marks of the question.*
- *Marks for each question are same.*
- ***Answer any two (2) questions from each Part (A and B).***

PART-A

1.	a)	Write down the ubiquitin based protein degradation reactions; mention the function of enzymes that are involved in ubiquitination process precisely.	4.5
	b)	Discuss the structure of proteasome and its role on protein degradation.	5.0
	c)	What is amino acid deamination? Discuss the mechanism of PLP-dependent enzyme catalyzed transamination.	4.5
	d)	Discuss the oxidative deamination of glutamate and its relation with hyperammonemia.	3.5
2.	a)	Discuss the reactions involved in urea cycle.	5.0
	b)	'The rate of the urea cycle changes with the rate of amino acid breakdown'-Justify.	3.0
	c)	Why are arginine and histidine glucogenic amino acid? Write down the metabolic degradation of arginine and histidine.	4.0
	d)	Leucine is an exclusively ketogenic amino acid-explain with its degradative pathway.	3.0
	e)	Write short note on phenylketonuria.	2.5
3.	a)	Suggest a mechanism for the degradation of heme to urobilin and stercobilin.	5.0
	b)	Explain why new born infants when premature often get jaundiced.	2.5
	c)	Outline the reactions catalyzed by porphobilinogen synthase (PBG) in the formation of porphobilinogen (PBG) of heme biosynthesis.	4.5
	d)	"Antifolates are anticancer agents"-Justify the statement.	3.0
	e)	Why purine nucleotide cycle is important in muscle metabolism?	2.5

PART-B

4.	a)	Show the biosynthetic origins of purine and pyrimidine ring.	4.0
	b)	Describe the synthesis of purine rings from IMP.	3.5
	c)	Write down the regulation of purine nucleotide biosynthesis.	3.0
	d)	Write short notes on Lesch-Nyhan Syndrome.	2.5
	e)	Write down the pyrimidine nucleotide biosynthesis.	4.5
5.	a)	What are chemotherapeutics? Give example.	3.0
	b)	'5-Fluorodeoxyuridylate is a potent antitumor agent?'- Justify.	3.0
	c)	Discuss the pathway of ammonia synthesis from uric acid.	3.0
	d)	What is starve-feed cycle? Briefly discuss different states from the early fasting to early refed state.	6.0
	e)	Write short note on obesity.	2.5
6.	a)	Define xenobiotics? Write down the differences between polar and non-polar xenobiotics.	3.5
	b)	Discuss the types of reactions occur at Phase-I of xenobiotics metabolites.	4.0
	c)	Demonstrate the mechanism of Cytochrome-P450 dependent oxidation in xenobiotic metabolism.	4.0
	d)	How is benzene transformed to leukemia-causing metabolite? Explain with reaction.	3.0
	e)	Discuss the factors affecting metabolism.	3.0