Shahjalal University of Science & Technology, Sylhet

Department of Biochemistry and Molecular Biology

4th Year 1st Semester B. Sc. (Hons) Final Examination, 2014

Course No. : **BMB-424** Course Title: **Oncology**

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)	Define cancer. 'Cancer is a microevolutionary process'- explain.	3.5
	b)	List the host factors that affect tumor cell growth. What do you mean by benign and malignant tumor?	4.0
	c)	Hyperplasia is abnormal multiplication of cells- what are the causes? What are the differentiating features between Neoplasia and Anaplasia?	6.0
	d)	A single mutation is not enough to cause a cancer - justify.	4.0
2.	a)	What is metastasis? What properties of cancer cells give them ability to metastasize?	2.5
	b)	Explain the basic principle involved in cancer invasion.	3.0
	c)	Discuss the molecular mechanism involved in the conversion of primary cancer into secondary one.	6.0
	d)	In order to spread, some cells from the primary cancer must break away, travel to another part of the body and start growing there. But how do cancer cells travel through the body?	6.0
3.	a)	What is carcinogen? Classify carcinogens according to their mode of action.	4.0
	b)	Briefly describe the cellular and molecular mechanism in multistage carcinogenesis.	6.0
	c)	Write down the features of six carcinogenic chemical agents associated with medical therapy and diagnosis.	3.0
	d)	Diagrammatically represent the stages of carcinogenesis of human tumours involving multiple genetic and epigenetic events in protooncogenes, tumour suppressor genes and anti-metastasis genes.	4.5

Part-B

4.	a)	Define oncogene and discuss about growth factors and growth factor receptors that are oncogenes.	6.0
	b)	An oncogene within the genome of a retrovirus has a high probability of causing cancer, but an oncogene in its normal chromosomal position does not. If these two oncogenes encode exactly the same polypeptide, how can we explain their different properties?	5.0
	c)	What are the products of oncogenes? Mention their role in cancer progression.	2.5
	d)	Write about the role of steroid hormones and growth factors in the development of breast cancer.	4.0
5.	a)	Both embryonic cells and cancer cells divide quickly. How can these two types of cells be distinguished from each other?	2.0
	b)	What is tumor angiogenesis? How would angiogenesis and invasion influence tumour growth and metastasis in a patient?	3.0
	c)	Mention some naturally occurring activators and inhibitors of angiogenesis and how do angiogenesis inhibitors work?	2.5
	d)	Discuss briefly about virus induced carcinogenesis.	4.0
	e)	Explain the techniques employed in diagnosis of cancer and discuss in brief about the chemotherapy and radiation theory of cancer treatment.	6.0
6.	a)	Discuss the significance of cell cycle regulation in the generation of cancer disease	3.0
	b)	Briefly explain the role of immune system during metastases.	3.0
	c)	What do you mean by tumor microenvironment or stroma? Discuss in brief about the conditions of tumor micro-environment.	5.0
	d)	What are mutations? Explain how chemical carcinogens play a role in the development of mutations?	4.0
	e)	Can the gene expression patterns of cancer cells be used to identify targets for cancer diagnosis or therapy? - discuss.	2.5