Code No: RR412305 **Set No. 1**

IV B.Tech I Semester Regular Examinations, November 2005
MOLECULAR BIOLOGY OF CANCER
(Bio-Technology)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define and differentiate START and Restriction point.
   (b) What are the factors and mechanisms controlling passage of cells through these points? [8+8]
2. How does Ras protein control cell cycle? Majority of C-Ras oncogenes obtained from cancerous tissue have mutations in codon 12, 13, 59 or 61 in the coding sequence. Suggest an explanation. [16]
3. Compare and contrast the anti-tumor activity of P^{53} and Rb gene. [16]
4. Write short notes on any 4 of the following:- [4x4]
   (a) Polycyclic aromatic hydrocarbons
   (b) Aromatic amines
   (c) Nitrose amines and nitrose amides
   (d) Halogenated compounds
   (e) Natural products
   (f) Alkalyting agents.
5. (a) Name the different units that measure radiation energy.
   (b) Describe the rate of release of energy and its biological effects. [8+8]
6. The American Cancer Society has listed some very common warning signals as cautions. List these signals. Why is it important to check for these signals? Discuss. [16]
7. On what principle does a mammogram work? Explain its usefulness and drawbacks in diagnosis. [16]
8. What is the basis of gene therapy in cancer treatment? It is expected to be more potent and specific against specific cancers- discuss this in the light of available information and trial phases of the treatment. [16]

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Code No: RR412305 **Set No. 2**

IV B.Tech I Semester Regular Examinations, November 2005
MOLECULAR BIOLOGY OF CANCER
(Bio-Technology)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Write short notes on any 2 of the following:-
   (a) Cyclins
   (b) Cyclin dependent kinases
   (c) Maturation promotion factor. [8+8]
2. A gene for the growth factor GM-CSF is inserted into a cell that has receptors for GM-CSF. What molecular changes occur in this cell to convert it to a malignant cell? [16]
3. (a) Define proto oncogenes and tumor suppressor genes.
   (b) The normal allele for proto oncogene is considered recessive while that of the tumor suppressor gene is dominant. Support this concept with explanation.

   [8+8]
4. Which chemical carcinogens are involved in the induction of skin cancers? Name the source of these carcinogens. [16]
5. What are sunscreen creams made of and what potential damage do they pose in terms of cancer induction? What role does P53 gene play in removing UV induced damage in skin? [16]
6. Summarize the steps involved in metastasis. [16]
7. What is Aspiration biopsy? Describe the technique, its usefulness and the risk involved. [16]
8. What is the main purpose of palliation (surgery) and in what type of cancer is it recommended? [16]

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Code No: RR412305 **Set No. 3**

IV B.Tech I Semester Regular Examinations, November 2005
MOLECULAR BIOLOGY OF CANCER
(Bio-Technology)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Write short notes on any 2 of the following:-
   (a) Cyclins
   (b) Cyclin dependent kinases
   (c) Maturation promotion factor. [8+8]
2. Describe the mechanism by which SV40/Human papillioma virus cause human cancers. [16]
3. (a) List at least 5 different types of tumor suppressor genes.
   (b) Describe in short the function of 3 of them in suppressing tumors and possible cancers they induce when mutated. [8+8]
4. What are Xenobiotics? Describe the mechanism involved in metabolism of xenobiotics. [16]
5. Write short notes on any 2 of the following:-
   (a) UV-A light and the carcinogenic activity
   (b) UV-B light and the carcinogenic activity
   (c) UV-C light and the carcinogenic activity. [8+8]
6. Cancer development is a multi-step process. Discuss a specific example to support this concept. [16]
7. Name the different forms of radiographic examinations in diagnosis of tumors of different types. [16]
8. Describe the response of different tissues following radiation exposure. [16]

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Code No: RR412305 **Set No. 4**

IV B.Tech I Semester Regular Examinations, November 2005
MOLECULAR BIOLOGY OF CANCER
(Bio-Technology)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Write short notes on any 2 of the following:-
   (a) TGF-
   (b) Family of E_2F
   (c) MPF
   (d) Cyclins. [8+8]
2. How does Ras protein control cell cycle? Majority of C-Ras oncogenes obtained from cancerous tissue have mutations in codon 12, 13, 59 or 61 in the coding sequence. Suggest an explanation. [16]
3. P^{53} is designated as the guardian of the genome. Support the concept. [16]
4. What mechanism do chemical carcinogens use in transforming a normal cell into a malignant cell? Provide one specific example. [16]
5. Describe in detail the various chromosomal damages that ionizing radiations can produce. Correlate these chromosomal damages with carcinogenesis. [16]
6. What is invasion and describe the mechanism of invasion. [16]
7. Write short notes on the usefulness of the following in cancer diagnosis: - [4x4]
   (a) Angiography
   (b) Isotope Scan
   (c) Ultrasonography.
   (d) Mammogram.
8. What biological effects are produced with radiation therapy and how are they related to cancer treatment? [16]

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