A 1277

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Seventh Semester

Industrial Biotechnology

IB 046 — CANCER BIOLOGY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are cyclins and name their cellular targets?

2. What is the relationship between p53 and sensitivity to cytotoxic drugs?

3. What is the role of cytochrome P-450 in carcinogenesis?

4. Define: tumor promoter ; teratogen.

5. What changes in expression of cell adhesion molecules (CAM) is expected in malignant cells?

6. "A malignant cell migrates through lymphatic ducts." Is this statement true or false? Why or why not?

7. The reverse transcriptase is an important component of a virion. What does it do?

8. What is a focus forming unit?

9. What is the basis of radiation therapy for cancer treatment?

10. Identify any four biomolecules useful in the treatment of cancer.

PART B — (5 × 16 = 80 marks)

11. (a) Prognosis of leukemia is significantly affected by the proper characterization of the cancerous cell. Discuss any two traditional and two recently developed methods for diagnosing leukemia.

Or

(b) How vasculogenesis is important in embryology and oncology? Discuss the similarity and differences.

12. (a) Basal lamina is an important barrier to metastasis. Describe factors preceding and succeeding the breach of basal lamina during metastasis.

Or

(b) Is cancer a disease of alteration (mutation) to a single gene or multiple genes? Elaborate your answer with methods to ascertain your statement.

13. (a) What are the five classes of oncogenes? Give some examples for each.

Or

(b) Compare and contrast DNA virus and RNA virus mediated cellular transformation, using some specific examples.

14. (a) Trace the steps involved in development of cancer in an experimental animal when exposed to a carcinogen.

Or

(b) (i) Why breaks in double stranded nucleic acids are difficult to repair? (8)

(ii) What is SOS repair, and under what conditions it is utilized? (8)

15. (a) Compare and contrast any FOUR of the features given below, between normal and transformed cells :

(i) actin filaments;

(ii) hormone dependence;

(iii) protease secretion;

(iv) telomerase activity;

(v) anchorage dependence. (4 × 4)

Or

(b) What is the relationship between antioxidants and cancer etiology? What is the basis for this observation?
