Register Number……

B.TECH. DEGREE EXAMINATIONS: APRIL/MAY 2012

Sixth Semester

BIO TECHNOLOGY

BTY209: Cancer Biology

Time: Three Hours **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. Increases in the enzymatic activity of some protein kinases important for the regulation of the cell cycle are due to

   A. kinase synthesis by ribosomes.

   B. activation of inactive kinases by binding to cyclins.

   C. conversion of inactive cyclins to active kinases by means of phosphorylation

   D. cleavage of the inactive kinase molecules by cytoplasmic proteases

2. The decline of MPF activity at the end of mitosis is caused by

   A. the destruction of the protein kinase (Cdk). B. decreased synthesis of cyclin.

   C. The degradation of cyclin. D. synthesis of DNA

3. Which of the following statements about carcinogenesis is false?

   A. Asbestos exposure increases the incidence of lung cancer

   B. Papilloma viruses produce tumours in animals but not in humans

   C. Exposure to aniline dyes predisposes to cancer of the urinary bladder

   D. Hepatitis B virus has been implicated in hepatocellular carcinoma

4. Genes which promote cancers

   A.tumor suppressor genes B. Oncogenes

   C. Growth factors D. Malignancy enhancers

5. Cancer is often the result of activation of ----------to ---------- and inactivation of --------- genes.

   A. oncogenes, tumor-suppressor genes, proto-oncogenes

   B. proto-oncogenes, oncogenes, tumor-suppressor genes

   C. oncogenes, proto-oncogenes, tumor-suppressor genes

   D. proto-suppressor genes, suppressors, oncogenes

6. Which of the following statement about telomerase is incorrect?

A. It is an enzyme that adds DNA to telomeres.

B. It serves as the template for telomeres lengthening.

C. It is not activated in cancer cells.

D. Its activity continually resets the cellular clock.

7. Which of the following is not a characteristic of cancer cells?

A. loss of cell cycle control B. transplantability

C. loss of contact inhibition D. all are characteristic

8. Action mechanism of alkylating agents is:

A. Producing carbonium ions altering protein structure

B. Producing carbonium ions altering DNA structure

C. Structural antagonism against purine and pyrimidine

D. Inhibition of DNA-dependent RNA synthesis

9. What term is used to indicate the ability of a cancer to invade other parts of the body and to produce secondary tumours?

A. Carcinogenesis B. Apoptosis C. Metastasis D. Mutagenesis

10. Tumor marker enzyme in prostate cancer is

A. Alkaline phosphatase B. Acid Phosphatase C. LDH D. CPK

PART B (10 x 2 = 20 Marks)

11. What are cyclins? What role do they play in cell cycle?
12. Define the functions of p53 in tumor suppression.
13. What are direct and indirect acting carcinogens? Explain with an example.
14. Give examples of ionizing and non-ionizing radiation.
15. Give any two mechanisms by which proto-oncogenes are converted to oncogenes.
16. Mention the role of telomerase in cancer.
17. Write the steps in metastatic cascade.
18. Explain the three step theory of invasion.
19. What are tumor markers? How are they detected?
20. What is the physical basis of radiation therapy for treating cancer?

PART C (5 x 14 = 70 Marks)

21. a) Explain in detail about cell cycle control by cyclin and cyclin dependent inases.

(OR)

b) Describe the mutations that cause changes in signal molecules. Add a note on the effect on receptor molecules.

22. a) Give an account on the metabolism of chemical carcinogens with neat sketches.

(OR)

b) Discuss the mechanism of radiation carcinogenesis with neat flow chart.

23. a) Write short notes on:

(i) RAS cycle (8)

(ii) Role of reterovirus in cancer (6)

(OR)

b) Describe how the growth factors and its receptors act as oncogenes in the transformed cells with suitable example.

24. a) Explain the different stages of metastatic process with suitable diagrams.

(OR)

b) (i) Highlighten on the role of proteases in basement membrane disruption. (7)

(ii) Give the characteristics of cancer cells. (7)

25. a) Give an account on the molecular tools employed for early diagnosis of cancer.

(OR)

b) Ennumerate the salient features of chemotherapy. Add a note on the role of chemotherapy in cancer treatment

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