



Date: 02-12-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART A

Answer ALL the questions

I Choose the correct answer

(5 x 1 = 5)

- 1 Most common cancer in children is
 - a) Acute lymphocytic leukaemia
 - b) Hepatocarcinoma
 - c) Chronic lymphocytic leukaemia
 - d) Sarcoma
- 2 JAK activated STAT dimers promote transcription by binding to
 - a) Cytosolic protein
 - b) Nuclear DNA
 - c) mRNA
 - d) None of the above
- 3 Dioxin is an example of
 - a) inorganic carcinogen
 - b) Chemical genotoxic carcinogen
 - c) Chemical non genotoxic carcinogen
 - d) Pro carcinogen
- 4 Use of siRNA in silencing oncogene is an example of
 - a) RNA interference
 - b) Ribozyme
 - c) Antisense RNA
 - d) None of the above
- 5 Viral vectors are preferred in gene therapy for cancer because of
 - a) High transfection efficiency
 - b) Unlimited capacity for DNA
 - c) Easy to manufacture
 - d) Transient expression

II State whether the following are true or false

(5 x 1 = 5)

- 6 Metastatic tumours have a well-defined capsule.
- 7 Cancerous cells exhibit differential heterogeneity.
- 8 Insertional mutagenesis is the gene rearrangement found in Philadelphia chromosome.
- 9 Mutator genes decreases the frequency of spontaneous mutation of other genes.
- 10 Anti-CTL4A antibodies can help in potent tumor regression in cancer therapy.

III Complete the following

(5 x 1 = 5)

- 11 _____ are models of cancer where cells or tissue from a patient's tumour are implanted into an immune deficient mouse.
- 12 Disruption of FGF does not impair vasculogenesis and _____.
- 13 Individual oncogene in concert with other oncogene or loss of tumor suppressor gene resulting in cancer is called _____.
- 14 Myc gene codes for _____ factor.
- 15 Targeting 'Self-antigen' class of tumor antigen has the risk of _____.

IV Answer the following within 50 words

(5 x 1 = 5)

- 16 Relate the Rb gene to tumorigenesis.
- 17 How is TGF- β activated?
- 18 Comment: Insertional mutagenesis.
- 19 Interpret the effect of DNA methylation in cancer.
- 20 State the application of Immunohistochemistry in cancer diagnosis.

PART B

V Answer the following each within 500 words.

(5 x 8 = 40)

Draw diagrams wherever necessary

- 21 a) Differentiate between benign and malignant tumours.
OR
b) Outline the stages of cancer.
- 22 a) Illustrate and explain GPCR pathway
OR
b) Give a brief account on tumor angiogenesis and inhibition.
- 23 a) Give a short note on chemical carcinogens and their mechanism of carcinogenesis
OR
b) Discuss how oxidative stress induces cancer
- 24 a) Briefly explain how mutation of proto oncogene results in cancer with an example.
OR
b) Discuss the role of DNA damage and repair mechanisms in carcinogenesis
- 25 a) Explain how tumor markers or tumor antigens could be isolated and characterised for therapeutics/diagnostics.
OR
b) Give an account on chemotherapy

PART C

VI Answer any TWO of the following, each within 1500 words.

(2 x 20 = 40)

Draw diagrams wherever necessary

- 26 Review the hallmarks of cancer. Integrate the hallmarks of cancer to any 2 methods for cancer treatment.
- 27 VEGF is a significant growth factor expressed by most of the tumor cells. Compile an essay describing VEGF, explaining its mechanism in tumor formation, metastasis and angiogenesis. How can we inhibit tumor formation considering VEGF as a therapeutic target?
- 28 Discuss the mechanism of immune response to cancer. Correlate immunotherapy with cancer treatment.
- 29 a) List various methods for cancer diagnosis. Elaborate in detail about molecular methods of cancer diagnosis.
b) Illustrate and explain how biochips can be used in cancer diagnosis.
