

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – NOVEMBER 2019

16/17/18PBT3ES02 – CANCER BIOLOGY

Date: 06-11-2019

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

PART – A

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

- Which of the following tumours originates from bone or cartilage?
a) *Carcinoma* b) *Sarcoma* c) *Lymphoma* d) *Myeloma*
- The G proteins that associate with GPCRs are
a) monomeric b) homopolymers c) dimeric d) heterotrimeric
- Which of the following are classified as chemical carcinogens?
a) aflatoxins b) benzene c) asbestos d) all of the above
- A mutated form of this gene results in individuals who UV light sensitive and have a 1000 fold increased risk in developing skin cancer.
a) *XP* b) *PX* c) *VHL* d) *VPL*
- An example of a drug that lowers cholesterol and has anticancer properties is
a) Statins b) bleomycin c) doxorubicin d) -blockers

II. State whether the following are true or false.

(5x1=5 Marks)

- Head and neck cancers are the most common form of cancers in Indian men.
- JAK activation inhibits cell proliferation, differentiation, cell migration and apoptosis.
- Tumour suppressor genes make proteins that normally prevent cell division.
- The first confirmed oncogene was discovered in 1970 and was termed sarcom.
- Photodynamic therapy uses light of a particular wavelength to kill tumour cells without the use of drugs.

III. Complete the following

(5 x 1= 5 Marks)

- _____ lymphoma is marked by the presence of a type of cell called the Reed-Sternberg cell.
- An x-ray of the breast used to diagnose breast cancer is called a _____.
- _____ is a hormone that is referred to as the human carcinogen.
- _____ are temperature sensitive proteins that were discovered by Ritossa.
- The _____ antigen is a tumour marker associated for the detection of prostate cancer.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

- State any two hallmarks of tumour cells.
- What is the other name of GPCR receptors?
- Give an example of a metal carcinogen.
- Define ribozymes.
- Differentiate between adjuvant and neoadjuvant chemotherapy.

PART B

Answer the following, each within 500 words.

(5 x 8 = 40 marks)

Draw diagrams wherever necessary.

21. (a) Differentiate between benign and malignant tumours.

OR

(b) *Angiogenesis is critical for dormant tumors to progress into cancer.* Discuss.

22. (a) Describe the signs and symptoms of skin cancer.

OR

(b) Write a note on cancer stem cells and their therapeutic implications.

23. (a) Explain how excessive production of reactive oxygen species can lead to cancer.

OR

(b) Comment on the effect of estrogen on tumorigenesis.

24. (a) Discuss the role of the *RBI* gene in tumour biology.

OR

(b) Given an account of T-VEC as a gene therapy strategy to fight cancer.

25. (a) Comment on the significance of immunohistochemistry staining for HER2 testing.

OR

(b) Discuss the significance of diet in the prevention of cancer.

PART – C

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

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Explain the biological cascade of metastasis. Add a note on its genetics.

27. Write an essay on colorectal cancer - signs and symptoms, stages, diagnostic tests and treatment.

28. Discuss personalized medicine in cancer.

29. Outline the clinical importance of tumour markers in cancer diagnosis with examples

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