



LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

SECOND SEMESTER – APRIL 2025

PBT2ME01 – CANCER BIOLOGY



Date: 07-05-2025

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A – K1 (CO1)

Answer ALL the questions

(5 x 1 = 5)

1 Choose the best option

- | | | |
|----|--|---|
| a) | Myeloma is cancer of
i) plasma cells
ii) myelin sheath | iii) epithelial cells
iv) myeloid progenitor cells |
| b) | CD44, CD24, and CD133 are often used to identify
i) metastatic cancer
ii) benign tumors | iii) cancer stem cells
iv) necrosis |
| c) | The increased cancer risk in <i>Xeroderma pigmentosum</i> is due to mutations in genes involved in
i) nucleotide excision repair
ii) apoptosis | |
| d) | Breast cancer that has spread to the lungs is called
i) lung cancer
ii) stage 1 cancer | |
| e) | A systemic radiation therapy called using radioactive iodine, I-131, is used to treat
i) Thyroid cancer
ii) Skin cancer | |
| | iii) G1 phase
iv) metastasis
iii) stage 2 cancer
iv) metastatic breast cancer
iii) Leukaemia
iv) Lymphoma | |

SECTION A – K2 (CO1)

Answer ALL the questions

(5 x 1 = 5)

2 Answer in one or two sentences

- | | |
|----|---|
| a) | Define metastasis. |
| b) | Give two examples of chemical carcinogens. |
| c) | State key difference between tumour suppressor gene mutation and proto-oncogene mutation. |
| d) | Mention any two risk factors of lung cancer. |
| e) | Give the application of CA-125 test. |

SECTION B – K3 (CO2)

Answer any THREE of the following

(3 x 10 = 30)

3 How does the disruption of the cell cycle regulation causes Cancer? Discuss.

4	How is angiogenesis important for the progression of cancer?
5	Relate the <i>XP</i> gene to tumorigenesis.
6	A certain family had a history of familial adenomatous polyposis. How is this connected to cancer and what precautions would you suggest?
7	What are the main types of immunotherapy for cancer treatment?
SECTION C – K4 (CO3)	
	Answer any TWO of the following (2 x 12.5 = 25)
8	Differentiate between benign and malignant tumours.
9	A patient's breast tissue biopsy revealed no over expression of estrogen and progesterone receptors. There was no over expression of HER2 protein and there was a mutation in BRCA1 gene. Identify the type of cancer and comment on it.
10	Diagrammatically represent the stages of colorectal cancer. Mention the symptoms, diagnosis and treatment.
11	Outline the types of radiation therapy.
SECTION D – K5 (CO4)	
	Answer any ONE of the following (1 x 15 = 15)
12	Predict the consequence of overexpression of epidermal growth factor receptor.
13	Summarise the symptoms, risk factors, diagnosis and treatment of breast cancer.
SECTION E – K6 (CO5)	
	Answer any ONE of the following (1 x 20 = 20)
14	Design a strategy employing cancer stem cell to treat cancer.
15	Outline chemotherapy as a method to treat cancer and add a note on its side effect.

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