19. (a) Define cell signaling. Explain signaling process occurring in angiogenesis.

Or

(b) Briefly explain the molecular mechanism in tumour metastasis.

20. (a) Give an account on classification of cytotoxic drugs.

Or

(b) Distinguish between immunotherapy and radiotherapy in cancer.

SECTION C — (3 × 10 = 30)

Answer any THREE questions.

21. Describe in detail about the origin and classifications of cancer.

22. Give detailed account on metabolic activation of chemical carcinogens.

23. Discuss about the cancer diagnosis methods, based on the tumour markers.

24. What is apoptosis? Explain the apoptotic signaling pathways.

25. What are stem cells? Describe the uses of stem cells in cancer personalized medicine

———————

S.No. 2600 **P 22 BTE 1 A**

(For candidates admitted from 2022–2023 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Biotechnology – Elective

CANCER BIOLOGY

Time : Three hours Maximum : 75 marks

SECTION A — (20 marks)

Answer ALL questions.

I. (A) Multiple choice questions (5 × 1 = 5)

1. Humans have approximately ———————— pg of DNA per haploid genome.

(a) 7 (b) 9

(c) 10 (d) 6

2. Epstein Barr virus has been consistently isolated from

(a) Neurodegeneration

(b) Burkitt's lymphoma

(c) Osteosarcoma

(d) Chondrosarcoma

3. Tumour suppressor genes
   (a) Generally control cell growth
   (b) Both copies of this gene must be mutated before a person develops cancer
   (c) Generally control cell death
   (d) All of the above

4. Tumor necrosis factor (TNF) is mainly activated by
   (a) Macrophages
   (b) CD95
   (c) Phosphatidylserine
   (d) Inflammatory response

5. Anticancer effect is shown by
   (a) Indoles (b) Isothiocyanates
   (c) Flavones (d) All of the above

(B) Fill in the blanks (5 × 1 = 5)

6. ———— is the abnormal proliferation of genetically altered cells.

7. The phase of the cancer induction during which carcinogens act on DNA is called the ————.

8. The oncogenes carried by viruses are called ————.

9. Melanoma avoid apoptosis by inhibiting the expression of the genes encoding ————.

10. ———— test is a widely used test to detect possible chemical carcinogens.

II. Explain the following questions (5 × 2 = 10)

11. Neoplasm.

12. Epstein Barr virus.

13. Caspase.

14. VEGF.

15. FISH.

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

16. (a) Discuss in brief about the classification of human cancers.

Or

(b) What are the differences between the normal and cancer cells?

17. (a) Write short note on HITS theory.

Or

(b) Explain in brief about irradiation carcinogenesis.

18. (a) Add information on tumour suppressor gene.

Or

(b) Make a note on the cell transforming ability of oncogene.