

B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18BTE401T - CANCER BIOLOGY*(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)***Note:**

- i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- ii. **Part - B and Part - C** should be answered in answer booklet.

Time: 3 Hours**Max. Marks: 100****PART - A (20 × 1 = 20 Marks)**

Answer all Questions

- | | Marks | BL | CO |
|---|-------|----|----|
| 1. Cancer of mesoderm origin is called _____
(A) carcinoma (B) sarcoma
(C) lymphoma (D) myeloma | 1 | 1 | 1 |
| 2. Transformed (cancer) cells acquire all of the following phenotypes except ONE
(A) fail to exhibit contact inhibition and instead grow as piles of cells (B) can grow in conditions of low serum
(C) adopt a round morphology rather than a flat or extended one (D) exhibit contact inhibition | 1 | 2 | 1 |
| 3. An increase in cell size is termed as _____
(A) hypertrophy (B) hyperplasia
(C) dysplasia (D) neoplasia | 1 | 1 | 1 |
| 4. p15 and p16 inhibits one of the following cyclin
(A) Cyclin D (B) Cyclin C
(C) Cyclin B (D) Cyclin A | 1 | 1 | 1 |
| 5. Which one of the following is NOT a molecular "sensor" of DNA damage?
(A) RAS (B) ATM
(C) DNA-PK (D) ATR | 1 | 2 | 2 |
| 6. Repair of DNA adducts resulting from platinum-based chemotherapy is achieved through _____
(A) mismatch repair (MMR) (B) base excision repair (BER)
(C) nucleotide excision repair (NER) (D) homologous recombination (HR) | 1 | 1 | 2 |
| 7. The interaction between genes and environment is called _____
(A) ecogenetics (B) epigenetics
(C) molecular genetics (D) meta-genetics | 1 | 1 | 2 |
| 8. One of the following is an example of a DNA-intercalating agent.
(A) adriamycin (B) cisplatin
(C) cyclophosphamide (D) carboplatin | 1 | 1 | 2 |
| 9. Active form of RAS is converted into inactive RAS by _____
(A) GAP (B) GNEF
(C) GEP (D) DEP | 1 | 1 | 3 |
| 10. Homo-oligomeric complexes resulting in autophosphorylation of tyr177 and thus activating a nuclear tyrosine kinase is due to _____
(A) BCR-ABL (B) v-abl
(C) Carboxylation (D) v-cis | 1 | 2 | 3 |

11. _____ is one modification required for localizing Ras to the membrane	1	2	3
(A) Farnesylation			
(B) Adenylation			
(C) Acetylation			
(D) Carboxylation			
12. Mutated form of proto-oncogene is termed as _____	1	1	4
(A) oncogene			
(B) neogene			
(C) promotor			
(D) tumor suppressor			
13. CXCL12 is also known as _____	1	1	4
(A) SDF-1 α			
(B) SDF-1 β			
(C) TGF-1 α			
(D) PDF-1 α			
14. Formation of new blood vessels from angioblasts or progenitor stem cells is called _____	1	1	4
(A) vasculogenesis			
(B) metastasis			
(C) angiogenesis			
(D) neoplasia			
15. EGF receptor that does not contain a tyrosine kinase domain is _____	1	2	5
(A) HER3			
(B) HER2			
(C) HER4			
(D) HER1			
16. STAT dimerization is mediated by _____ upon binding of the cytokine to its receptor.	1	1	5
(A) JAK			
(B) MAPK			
(C) TNF			
(D) TGF			
17. Local therapy for cancer includes one of the following.	1	2	5
(A) surgery			
(B) chemotherapy			
(C) hormonal therapy			
(D) monoclonal antibodies			
18. The first patient treated with the linear accelerator (radiation therapy) for retinoblastoma in 1957 is _____	1	1	6
(A) Gordon Isaacs			
(B) Gordon John			
(C) Gordon Mathew			
(D) Gary Wildey			
19. Molecular imaging techniques which involve using molecular imaging probes to detect biological molecules in living subjects include all of the following except ONE	1	2	6
(A) X-ray			
(B) SPECT			
(C) MRI			
(D) PET			
20. Vitaxin is a _____ Mab against $\alpha v\beta 3$	1	2	6
(A) humanized			
(B) Rabbit			
(C) Horse			
(D) Rat			

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

21. List a short note on therapeutic strategies of cyclin/cdk.	4	3	1
22. Explain about principles of conventional cancer therapies	4	3	2
23. With a neat diagram explain about upstream and downstream effects of NF- κ B.	4	3	3
24. Summarize a short note on methylation in cancer.	4	3	4
25. With a neat diagram, explain about paradoxical roles of TGF β .	4	1	5
26. Outline the diseases associated with angiogenesis.	4	3	6
27. List down the complication of chemotherapy.	4	2	6

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

Marks BL CO

- | | | | | |
|-----|---|----|---|---|
| 28. | (a) Explain about the structure, function and regulation of p53. | 12 | 1 | 1 |
| | (OR) | | | |
| | (b) Illustrate the roles of pRb, myc and TGF- β in influencing cell cycle. | | | |
| 29. | (a) Compare the six major DNA repair pathways. | 12 | 1 | 2 |
| | (OR) | | | |
| | (b) Discuss about therapeutic targets of epigenome. | | | |
| 30. | (a) Describe the role of cancer stem cells and pathways involved in this process. | 12 | 3 | 3 |
| | (OR) | | | |
| | (b) Organize the key factors and mechanisms involved in immune reactivity to tumors. | | | |
| 31. | (a) Write about prolactin-R signaling and pathway cross-talk in cancer | 12 | 3 | 4 |
| | (OR) | | | |
| | (b) Illustrate tumor micro-environment and explain how it promotes cancer growth? | | | |
| 32. | (a) Categorize the non-pharmacological therapy of neuropathic cancer pain. | 12 | 3 | 6 |
| | (OR) | | | |
| | (b) Write about mechanisms of actions of chemotherapeutic drugs in neoplastic disease | | | |

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