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M.E./ M.TECH. DEGREE EXAMINATIONS, MAY 2023

First Semester

BY22016 – ADVANCED CANCER BIOLOGY AND THERAPY*(Biotechnology)***(Regulation 2022)****TIME: 3 HOURS****MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	To identify the role of genetics and immune system in cancer	2
CO 2	To explain tumorigenesis and interactions of immune cells with cancer.	2
CO 3	To evaluate role of tumor suppressor gene and tolerance machinery.	5
CO 4	To analyze the failures of different mechanism leading to un repairable DNA damage	4
CO 5	To create medical applications using immune cells against Cancer	6

PART- A (20 x 2 = 40 Marks)

(Answer all Questions)

	CO	RBT LEVEL
1. List any four mutagens causing cancer.	1	3
2. Mention any two genetic mechanisms that activate oncogenes in human neoplasms.	1	2
3. How do immune cells respond to cancer?	1	2
4. Name any four frequently observed mutations in types of cancer.	1	3
5. What is cellular senescence?	2	2
6. Write the mechanism of antigen uptake by MHCs.	2	2
7. Distinguish benign cancer from malignant cancer.	2	3
8. What is immunotherapy?	2	2
9. What is a tumor suppressor gene? Give an example.	3	2
10. Distinguish necrosis and apoptosis.	3	3
11. Mention any four common familial cancer syndromes.	3	3
12. What is the mechanism of pRB?	3	2
13. Distinguish angiogenesis and metastasis.	4	3
14. What is the Warburg effect in cancer?	4	2
15. When DNA repair mechanisms are useful in cancer development and therapy?	4	2
16. What is an immunogenic tumor?	4	2
17. What are the new genomic technologies used for diagnosis of cancer?	5	2
18. List any four biological response modifiers for cancer.	5	3

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| 19. | What is the mechanism of CAR T cell therapy? | 5 | | 2 |
| 20. | Mention any four traditional chemotherapies. | 5 | | 2 |

PART- B (5 x 10 = 50 Marks)

		Marks	CO	RBT LEVEL
21. (a)	Mention the role of dendritic cells and natural killer cells in combating cancer.	(10)	1	3
(OR)				
(b)	Discuss the role of growth factors and receptors involved in carcinogenesis.	(10)	1	3
22. (a)	Write in detail the role of T-cell receptor mechanism in cancer immunology.	(10)	2	3
(OR)				
(b)	How is MHC system recognizing cancer antigen? Explain.	(10)	2	3
23. (a)	Discuss about the mechanism of RAS signaling in cancer.	(10)	3	3
(OR)				
(b)	Correlate the pathway that self regulates immune system for prevention of auto immune disorders.	(10)	3	3
24. (a)	Explain about the DNA repair pathways in cancer therapy and resistance.	(10)	4	3
(OR)				
(b)	Mention in detail about the role of metabolism in cancer.	(10)	4	3
25. (a)	Explain about dendritic cell therapy in treatment of cancer.	(10)	5	3
(OR)				
(b)	Classify and mention about the types of immunotherapies for the treatment of cancer.	(10)	5	3

PART- C (1 x 10 = 10 Marks)

(Q.No.26 is compulsory)

		Marks	CO	RBT LEVEL
26.	Elucidate and distinguish the role and mechanism of RNA and DNA tumor viruses in oncogenesis.	(10)	1	5
