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B.Tech. DEGREE EXAMINATION, JUNE 2023

Seventh Semester

18BTE401T - CANCER BIOLOGY

(For the candidates admitted during the academic year 2018-2019 to 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 40 minutes.
ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

Part - A (20 × 1 Marks = 20 Marks)
Answer **All** Questions

		Marks	BL	CO
1.	Cancer of glandular tissue is termed as_____ (A) Sarcoma (B) Adenocarcinoma (C) Myeloma (D) Osteoblastoma	1	1	1
2.	Warburg effect phenomenon is best described as_____ (A) Increase in aerobic glycolysis and lactate production (B) Due to ER dysfunction (C) Decrease in lactate production (D) Mainly deals about mutagenesis	1	2	1
3.	What is the carcinogenic aflatoxin in peanuts? (A) Sodium nitrite (B) Aflatoxin B (C) Fumonisin B (D) PCB	1	1	1
4.	Oral contraceptives taken orally to prevent pregnancy have reported to lower the risks of colorectal cancer through_____ (A) Suppress metastasis (B) Lowering the levels of bile acids in the blood (C) By changing the susceptibility of infection with high-risk HPV types (D) By inhibiting the angiogenesis process	1	2	1
5.	Example of a monofunctional alkylating agent is _____ (A) Oxaliplatin (B) Cisplatin (C) Adriamycin (D) Cyclophosphamide	1	1	2
6.	DNA replicative mechanism that is most active in post-replicative cells is _____ (A) NER (B) NHEJ (C) BER (D) HER	1	2	2
7.	Defective DNA-repair in tumor cells can:_____ (A) Promote Tumor Suppressor Genes (B) Amplify drug-resistance genes (C) Reduce invasiveness (D) Repress new oncogenic fusion genes	1	2	2
8.	How does the papilloma family of viruses cause cancer? (A) Replicate in dividing cells and encodes three oncogenic proteins E5, E6 and E7 (B) Integrates viral genome into cellular DNA (C) Has an oncogene able to initiate cancer (D) Acts as a co factor for a cellular oncogene	1	1	2
9.	Anti-apoptotic member of Bcl-2 family is _____ (A) Bak (B) Bcl-GL (C) Bcl-XL (D) Bax	1	1	3

10.	RAS is activated by _____ (A) SOS (B) Src (C) PI3-K (D) ABL	1	1	3
11.	Which is a downstream target of NF-kB? (A) Heme oxygenase (B) Cytokine oxidase (C) Urokinase plasminogen inhibitor (D) Cytochrome C	1	2	3
12.	All of the following are tumor-immnunotherapy except:_____ (A) Passive non-specific immunotherapy (B) Passive specific immunotherapy (C) Active non-specific immunotherapy (D) Active specific immunotherapy	1	2	3
13.	Which is not a downstream of VEGF signaling pathway? (A) Akt/PI3K pathway (B) PKC pathway (C) NOS pathway (D) NAK pathway	1	1	4
14.	Receptor of the Wnt-Ligand is _____ (A) β –catenin (B) Frizzled (C) Patched (D) Smoothened	1	2	4
15.	Which of these factors is not stimulated during ECM degradation? (A) PDGF (B) TGF-β (C) EGF (D) IL-1	1	1	4
16.	Which of the following are endogenous inhibitors of angiogenesis? (A) Angiostatin (B) Angiopoietin-1 (C) Tenacin (D) COMP-Angiopoietin	1	2	4
17.	Which of the following is a chemotherapeutic plant alkaloid? (A) Mercaptoguanine (B) Vinblastine (C) Thiotepa (D) Busulfan	1	1	5
18.	Radionuclide that is effective therapy for well differentiated thyroid cancer is _____ (A) Radium-223 (B) Strontium-89 (C) Iodine 131I (D) Lutetium-177	1	2	5
19.	5-Fluorouracil is an inhibitor of _____ (A) DHFR (B) THF (C) Microtubule formation (D) Thymidylate synthase	1	1	5
20.	Effects of Tamoxifen is observed in which phase of cell cycle? (A) G2 phase (B) M phase (C) S phase (D) G1 phase	1	1	5

Part - B (5 × 4 Marks = 20 Marks)
Answer **any 5** Questions

		Marks	BL	CO
21.	Write short notes on 'Double minutes'.	4	1	1
22.	Explain why RB gene is called tumor suppressor gene?	4	2	1
23.	Outline the major steps involved in metastasis?	4	2	2
24.	Identify the role of angiogenesis in cancer biology.	4	3	3
25.	Dissect the regulatory role of Matrix Metalloproteinases in the Tumor environment.	4	4	4
26.	Determine the role of M-phase promoting factor in cell cycle regulation.	4	4	4
27.	Assess the limitations of chemotherapy.	4	1	5

Part - C (5 × 12 Marks = 60 Marks)
Answer **All** Questions

		Marks	BL	CO
28.	a. Examine the metabolic changes in tumour cells. **(OR)** b. Dissect the role of diet in cancer development and prevention.	12	3	1
29.	a. Explain in detail about various forms of cancers. **(OR)** b. Examine the major sources of DNA damage. How do cells repair damaged DNA?	12	3	2
30.	a. Select the type of mutation that causes proto-oncogenes to convert them to oncogenes. **(OR)** b. Explain in detail about tumour-specific antigens.	12	3	3
31.	a. Demonstrate the sequence of events in apoptosis. **(OR)** b. Infer the importance of stroma for cancer growth and invasion process.	12	4	4
32.	a. Demonstrate the various mechanism of action of chemotherapeutic agents. **(OR)** b. Explain the most current methods of cancer detection.	12	4	5

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