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**Question Paper Code: 99D10**

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Professional Elective

Biotechnology

19UBT910 - CANCER BIOLOGY

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1. Highlight the hallmark change in Hereditary Non Polyposis Colorectal Cancer (HNPCC). Elaborate CO2-App
2. Suggest the different modes of cancer treatment CO1-U
3. State the single hit and multiple hit' theory of carcinogenesis CO1-U
4. Why p53 is known as the Guardian of genome? CO2-App
5. Indicate the mechanisms by which radio-therapeutic agents inhibit cancer cells CO1-U
6. Comment on the CA125 and PSA as tumor markers CO2-App
7. How does the MRI work in case of metastasis? CO2-An
8. Write down any important 4 features related to heterogeneity of cancer cascade CO2-An
9. Why nanoparticles are used in drug delivery CO3-App
10. Articulate the various applications of nanotechnology in the field of medicine CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) Elaborate the nomenclature of common tumor and how pre-molecular era is different from molecular era. Explain the metabolic alterations in cells undergoing neoplastic transformation CO2- An (16)  

Or
- (b) Retinoblastoma gene is called governor of cell cycle and p53 is called guardian of cell cycle. Who stops check points and explain its regulation in cell cycle for both normal and cancer cell CO2-An (16)
12. (a) Imagine that you are looking after a cancer patient in oncology department. Develop a detailed note about your experience at the hospital and how will you manage them to overcome their mental stress. Write in detail by drawing your imagination and humane quality CO2-An (16)

Or

- (b) Explain the various cellular events in carcinogenesis and also decipher the details of carcinogens and its mode of action CO2-An (16)
13. (a) Analyse the chromothrypsis mechanism in cancer and mention how protooncogenes and oncogenes leads to the formation of cancer CO3- App (16)
- Or
- (b) Describe how the neoplastic transformation leads from various metabolic alterations in breast cancer and elaborate its genetics and histological part CO3- App (16)
14. (a) The molecular mechanisms behind metastasis involve few steps starting from the ECM remodeling to entering the secondary tissue site with each of these steps. Decipher its mechanism and importance CO3-App (16)
- Or
- (b) The EMT transition behind metastasis involves few steps starting from the ECM remodeling to entering the secondary tissue site with each of these steps. Decipher its mechanism and importance CO3-App (16)
15. (a) Discuss the use of nano tubes, quantum dots and polymeric conjugates in cancer drug delivery and how the cancer nano medicine have revolutionized the modern medical world CO1- U (16)
- Or
- (b) “Cancer Immunotherapy with all its innovations has created a footprint in cancer therapeutics”. Justify the title in detail and also give out the detailed description of 2018 Nobel prize in physiology for cancer immunotherapy CO1-U (16)