

KATHMANDU UNIVERSITY
End Semester Examination [C]

11 April, 2023

Marks Scored:

Level : B.Tech.

Year : IV

Exam Roll No. :

Time: 30 mins.

Course : BIOT 410

Semester : I

F. M. : 20

Registration No.:

Date :

SECTION "A"

[10Q. × 1 = 10 marks]

Choose the most appropriate answer and **mark** [×] in the box.

1. Epigallocatechin gallate (EGCG) is an anticarcinogen derived from _____.
[] Tomato [] Green tea [] Broccoli [] Grapes
2. A drug called Iressa (generic name gefitinib) targets the receptor of _____.
[] PDGF [] FGF [] EGF [] VEGF
3. The protein that in conjunction with BRCA2 forms the repair complex that coats the exposed single-stranded DNA regions.
[] Rad48 [] Rad49 [] Rad50 [] Rad51
4. Antibiotics that is used as anticancer drug and causes DNA crosslinking is _____.
[] doxorubicin [] daunorubicin [] bleomycin [] mitomycin
5. The oncoprotein produced by HPV that binds to p53 and causes its destruction _____.
[] E5 [] E6 [] E7 [] E8
6. Protein that regulates the activity of a specific group of genes during embryonic development _____.
[] KiSS1 [] Twist [] Mad [] Myc
7. DNA replication checkpoint is present in this phase of the cell cycle.
[] M-phase [] G1-phase [] S-phase [] G2-phase
8. A group of DNA polymerase that can catalyze DNA synthesis across a region containing a pyrimidine dimer _____.
[] eta [] delta [] kappa [] alpha
9. A country having highest rate of breast cancer _____.
[] USA [] China [] Japan [] Argentina
10. In the production of monoclonal antibodies, antibody-producing lymphocytes were isolated from _____.
[] Bone marrow [] Spleen [] White blood cells [] Liver

SECTION "B"
[10Q. × 1 = 10 marks]

Fill in the blanks.

11. _____ is an artificial sweetener that is used in food and beverages.
12. _____ is the surgery technique mostly used for the treatment of prostate cancers and for precancerous conditions of the cervix such as dysplasia.
13. Some of the signaling molecule involved in cell motility act as _____ that guide cell movement by serving as attracting signals towards which the cancer cells will migrate.
14. The condition in which the tendency for whole chromosome to be lost or gained thereby leading to a cells that possess an abnormal number of chromosomes is called _____.
15. The drug that binds to and inhibits the abnormal tyrosine kinase produced by the BCR-ABL oncogene is _____.
16. The viral protein that helps in the integration of the DNA copy of viral RNA into the host chromosomal DNA is _____.
17. _____ are chromosome regions that stain homogenously rather than exhibiting the alternating pattern of light and dark bands that is typical of normal chromosomes.
18. The first synthetic dye discovered by Perkin is _____.
19. _____ is a term used to refer to any alteration in gene expression that does not involve mutating the structure of a gene itself.
20. Gap junctions, which are specialized cell surface structures is composed of a protein called _____.

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F.M. : 55

SECTION "C"

(Long answer questions)

[3Q. × 7 = 21 marks]

Attempt *ANY THREE* questions.

1. Give a brief account on different types of cancer caused by various cancer viruses.
2. Describe the various features of cancer cell proliferation. Give an experiment to prove that tumor growth depends on angiogenesis. [4+3]
3. What is the role of APC tumor suppressor gene in Wnt signaling pathway? Describe.
4. Describe any two cancers that are caused by loss of function mutations in gatekeeper genes.

SECTION "D"

(Short answer questions)

5. Write short notes on (*ANY FOUR*): [4Q. × 3.5 = 14]
 - a. Oncotype DX and breast cancer.
 - b. Gene therapy for severe combined immunodeficiency (SCID).
 - c. Koch's postulates.
 - d. Monoclonal antibodies for cancer treatment.
 - e. Knudson two-hit model.
6. Write down **TWO** differences between (*ANY FOUR*): [4Q. × 2 = 8]
 - a. Pap smear and Biopsy.
 - b. Carcinoma and Sarcoma.
 - c. Infectious mononucleosis and Hodgkin's disease
 - d. Vasculogenesis and Angiogenesis.
 - e. Physical sunscreen and Chemical sunscreen.
7. Give reasons why/how? (*ANY FOUR*): [4Q. × 3 = 12]
 - a. Platinum electrodes inhibit bacterial cell division.
 - b. Cancer cell becomes resistant to multiple drugs.
 - c. Role of mosquito in causing Burkitt's lymphoma is indirect.
 - d. Asbestos is often referred to as "needle of death".
 - e. Cytochrome P450 is responsible for carcinogen activation.