KATHMANDU UNIVERSITY
End Semester Examination
January, ~~2024~~ 2025

Marks Scored:

Level : B.Tech.
Year : IV

Course : BIOT 410
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date : 27-jan-025

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and mark [X] in the most appropriate option from each set of choices

1. Chromosomal translocation that leads to the Burkitt's lymphoma is created by translocation between which chromosomes?
   [ ] 9 and 22 [ ] 8 and 14 [ ] 9 and 14 [ ] 8 and 22

2. Gap junction are cell surface structures composed of protein called
   [ ] Receptors [ ] Desmosomes [ ] Connexin [ ] E cadherin

3. The most common type of spontaneous mutation are caused by interactions between DNA and
   [ ] RNA [ ] Protein [ ] UV [ ] Water

4. Which of the following is a feature of Metastasis
   [ ] Cells enter blood stream [ ] Travel to distant site
   [ ] Exhibit 17 gene signature [ ] All of the above

5. The cancer that goes up dramatically after 60 years of age is_____?
   [ ] Leukemia [ ] Lung [ ] Prostrate [ ] Colon

6. Which chemical carcinogen is also referred to as "needles of death"?
   [ ] Aniline [ ] Asbestos
   [ ] Ethylene dibromide [ ] Dioxin

7. Studies have revealed that saccharin causes bladder cancer only in _____?
   [ ] Rats [ ] Human [ ] Guniea pigs [ ] Mice

8. The most serious form of skin cancer is
   [ ] Basal cell carcinoma [ ] Squamous cell carcinoma
   [ ] Melanoma [ ] All of the above

9. Which of the following cytochrome enzyme is involved in carcinogen activation?
   [ ] Cytochrome P450 1 [ ] Cytochrome P450 1A
   [ ] Cytochrome P450 1A1 [ ] Cytochrome P450 1AB

10. Biologically equivalent dose of radiation is measured in which units?
    [ ] Electron volt [ ] Gray [ ] Sievert [ ] BERT

11. The virus, identified as a member of the DNA-containing herpesvirus group, is called
    [ ] EBV [ ] HPV [ ] HCV [ ] HBV

12. The mechanism by which infectious agents cause cancer is
[ ] By interfering with Immune System
[ ] By tissue destruction and inflammation
[ ] Stimulating the proliferation of infected cells.
[ ] All of the above

13. The inherited defect leading to retinoblastoma involved a gene located in the deleted region of which chromosome?
[ ] 9 [ ] 22 [ ] 13 [ ] 14

14. Multiple endocrine neoplasia type II, is caused by inheriting a single mutation in
[ ] RET gene [ ] Rb gene [ ] p53 gene [ ] BRCA gene

15. RAS oncogene produces abnormal Ras protein in which a single amino acid is converted from Glycine to
[ ] Glutamine [ ] Valine [ ] Proline [ ] Methionine

16. The oncogene formed by local DNA rearrangement is
[ ] MYC [ ] BCR-ABL [ ] TRK [ ] TPM 3

17. The fused gene (COL1A1-PDGFB) behaves as an oncogene because it produces _____ in an uncontrolled fashion, thereby causing cells containing the gene to continually stimulating their own proliferation.
[ ] PDGF [ ] VEGF [ ] MYC [ ] RAS

18. Which of the following protein is a member of class of molecules called Cdk inhibitors that blocks the activity of Cdk-cyclin complexes
[ ] p53 [ ] p21 [ ] p16 [ ] p18

19. Which test is used for the early detection of cancer in the uterine cervix?
[ ] Ames [ ] Pap smear [ ] Mammography [ ] Genetic Testing

20. _____ is a small molecule that binds to and inhibits the abnormal tyrosine kinase produced by the BCR-ABL oncogene present in chronic myelogenous leukemias?
[ ] Avastin [ ] Gleevac [ ] Velcade [ ] Taxol

SECTION "B"

[10 Q. × 1 = 10 marks]

Fill in the blanks

21. Antigens, which are present in higher concentration in a tumor but are not unique to tumors are referred to as _____ *antigens.*

22. The MHC molecule present in D122 cells is _____.

23. *Hepatitis B and Hepatitis C* viruses are associated with _____ cancer.

24. _____ , is a potent carcinogen in rats but not in guinea pigs.

25. The ultraviolet Radiation that is of lower wavelength and is filtered out by Ozone layer is _____ .

26. The protein injected by H pylori into epithelial cells is called _____ .

27. Specific anticancer drug called *Herceptin*, is designed to counteract the effects of the overactive _____ gene.

28. The APC Tumor Suppressor Gene codes for a protein that Inhibits the _____ Signaling Pathway.

29. Screening test called fecal occult test is designed to detect _____ cancer.

30. The drug that binds to and inhibits the enzyme dihydrofolate reductase and is a derivative of folic acid is _____.

KATHMANDU UNIVERSITY
End Semester Examination
January, ~~2024~~ 2025

27-jan-2025

Level : B.Tech.
Year : IV
Time : 2 hrs. 30mins.

Course : BIOT 410
Semester : I
F. M. : 55

SECTION "C"
[3 Q. × 8 = 24 marks]

Attempt ANY THREE questions.

1. What is a proto-oncogene? Describe the mechanism involved in conversion of proto-oncogene to oncogene? [1+7]

2. Discuss in detail the different steps involved in Cancer screening? [8]

3. What is angiogenesis? How does cancer spread? [1+7]

4. What is a radiation? Explain how radiation cause cancer? [1+7]

SECTION "D"
[31 marks]

Attempt ANY SIX questions. ***(Q.N. 7 is compulsory)***

5. Write down the profiles exhibited by a cancer cell? [5]

6. What is a carcinogen? Describe how Chemical carcinogens was discovered? [1+4]

7. What is a Tumor suppressor Gene? What different roles the TSG p53 plays in cancer cell proliferation? [1+5]

8. Enlist different infectious agents involved in causing cancer? [5]

9. What is the two hit model in cancer development? [5]

10. Describe in brief how heredity is involved in cancer cell proliferation? [5]

11. Write short notes on *ANY TWO.* [2×2.5=5]
    a. Pyrimidine dimer
    b. Telomere
    c. Cancer Diagnosis