Marks Scored:

KATHMANDU UNIVERSITY
End semester Examination [C]
June, 2018

Level : B. Tech.
Year : IV
Course : BIOT 410
Semester: I
Exam Roll No. :
Time: 30 mins.
F. M. : 20
Registration No.:
Date JUN :1 2 2018

SECTION "A"
[10 Q. × 1 =10 marks]

Mark "X" in the most appropriate box.

1) The phase of cell cycle that has variable duration according to cell type is.
[ ] M phase [ ] G1 phase [ ] S phase [ ] G2 phase

2) Which of the following is not a function of active mitotic Cdk-cyclin stimulation.
[ ] Nuclear envelope breakdown [ ] Chromosome condensation
[ ] Targeted protein degradation [ ] DNA replication

3) Which of the following fruit is not the major source of Caffeic acid
[ ] Apple [ ] Carrot [ ] Pineapple [ ] Grape

4) The first mesothelioma epidemic were reported from
[ ] Germany [ ] South Africa [ ] Britain [ ] Nigeria

5) Hepatitis C virus belongs to family
[ ] Retrovirus [ ] Herpesvirus [ ] Flavivirus [ ] Adenovirus

6) Reed-Sternberg cells are unique to
[ ] Infectious mononucleosis [ ] Nasopharyngeal carcinoma
[ ] Hodgkin's disease [ ] Kaposi's sarcoma

7) The plasma membrane G protein responsible for bladder cancer
[ ] v-K-ras [ ] v-H-ras [ ] KRAS [ ] HRAS

8) The protein that is involved in the formation of repair complex in double strand DNA break
[ ] Rad 50 [ ] Rad 51 [ ] Mad [ ] Bub

9) The analog of thymine base
[ ] Cytarabine [ ] Mercaptopurine [ ] Fluorouracil [ ] Thioguanine

10) Drug used in cancer chemotherapy that act as aromatase inhibitor.
[ ] Arimidex [ ] Taxol [ ] Melphalan [ ] Mitomycin

SECTION "B"

[10 Q. × 1 = 10 marks]

Fill in the blanks:

11) Normal cells attach themselves to the extracellular matrix through cell surface protein called_____

12) The metabolic activation of precarcinogen into carcinogen occurs in _____

13) _____was the first widely used chemical sunscreen introduced in 1970s..

14) The *gag* gene of Rous sarcoma virus is responsible for _____synthesis

15) TRK oncogene is a fusion gene which is created by chromosomal_____.

16) The protein that helps in the separation of duplicated DNA by degrading cohesion is called _____.

17) Imaging techniques that utilizes magnetic fields is called _____.

18) Derivative of folic acid that binds and inhibits the enzyme dihydrofolate reductase is _____

19) Radiation sourcewhen inserted near to the tumor is called_____.

20) Proteins that stimulate immune responses against infectious agents are called _____.

KATHMANDU UNIVERSITY
End Semester Examination [C]
June, 2018

JUN 12 2018

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

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

SECTION "C"
(Long answer questions)
[3 Q. × 7 = 21 marks]

Attempt *ANY THREE* questions:

1) "Anchorage independent growth exhibited by cells grown in culture is related to their ability to form tumors." Prove the above statement with suitable experiments.

2) Give an experiment to prove that immune system can inhibit the metastasis process. What are the different types of tumor-host interactions? [4+3]

3) Describe the adoptive cell transfer therapy with appropriate figures.

4) Describe with the help of figure the PI3K-Akt signaling pathway and TGFβ-Smad signaling pathway.

SECTION "D"
(Short answer questions)

5) Write short notes on (*ANY FOUR*): [4 Q. × 3.5 = 14]
   a) Relationship between age and cancer risk.
   b) Experiment leading to discovery of Rous sarcoma virus.
   c) Xerodermapigmentosum.
   d) Dominant negative mutation.
   e) Gene amplification.

6) Write down *TWO* differences between (*ANY FOUR*): [4 Q. × 2 = 8]
   a) DNA replication checkpoint and Spindle checkpoint.
   b) Translesion synthesis and Mismatch repair.
   c) Blood flukes and Liver flukes.
   d) Chromosomal translocations and Insertional mutagenesis.
   e) Chemotherapy and Immunotherapy.

7) Give reasons why/ how? (*ANY FOUR*): [4 Q. × 3 =12]
   a) End replication problem is solved.
   b) Cell cycle regulation in cancer cells and normal cells can be exploited experimentally by using drugs like staurosporine and camptothecin.
   c) Earlier attempts of gene therapy was not successful in children suffering from a debilitating immune disorder called severe combined immunodeficiency (SCID).
   d) Cells that divide more undergo mitotic death.
   e) Human clinical trials involve multiple phases of testing.