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2303N283

Candidate's Seat No :_____

M.Sc. Sem.-1 Examination

403

Cancer Biology

March 2022

Time : 2-00 Hours] **[Max. Marks : 50**

Instructions:
- All Questions in Section I carry equal marks
- Attempt any THREE questions in Section I
- Question IX in Section II is COMPULSORY
- Illustrate your answers with neat and labeled diagram wherever necessary

Section I

Q-I	A	Write a note on tumor suppressor gene p53.	7
	B	Write a note on apoptosis and necrosis and explain the difference between the two.	7
Q-II	A	Write a note on oncogenes code for growth factor and growth factor receptor.	7
	B	Explain necroptosis.	7
Q-III	A	What is signal transduction? Explain the role of G Protein coupled receptor and tyrosine kinase in signal transduction.	7
	B	Describe the role of cyclins and cyclin dependent kinases in different phases of cell cycle.	7
Q-IV	A	Write a short note on small molecular second messengers.	7
	B	Explain 'Modulation of Autophagy for cancer treatment'.	7
Q-V	A	Describe process of telomerase regulation.	7
	B	Define genomic instability and describe basic defenses against it.	7
Q-VI	A	Write a note on (1) hTERT gene (2) Regulation and maintenance of telomeres	7
	B	Describe role of cell cycle check points and explain any one in detail.	7
Q-VII	A	Describe process of Telomere lengthening in absence of telomerase enzyme.	7
	B	How mismatch repair pathway (MMR) correct DNA mismatches? What defects in MMR pathway leads to tumorigenesis?	7
Q-VIII	A	Discuss different modes of telomerase activity inhibition.	7
	B	Describe homologous recombination repair pathway and its role in tumorigenesis.	7

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Section II

8

Q-IX **Multiple Choice Questions**

1 **A Which one of the following statements applies to tumor suppressor genes?**

a Mutation in one allele often predisposes carriers to greater inherited cancer susceptibility

b Li-Fraumeni syndrome is caused by inactivation of RB1 gene

c They are activated by many oncogenic DNA viruses

d They are rarely inactivated in tumors expressing oncogenic RAS

2 **B Cyclic nucleotides activate _____during signal transduction.**

a Phosphatase

b Kinase

c Other nucleotide

d Ion channels

3 **C How much part of human genome is devoted to coding for proteins that are part of signal transduction?**

a Half of the genome

b One third of genome

c One sixth of genome

d One fourth of genome

4 **D The passage of a cell through stages of cell cycle is controlled by _____ that phosphorylates many different proteins at appropriate times.**

a Cdk activating kinase

b Cyclins

c Cyclin-dependent kinase

d Tyrosine kinase

5 **E Chromosome_____ are involved in transcriptional repression of hTERT.**

a 3 and 10

b 5 and 8

c 9 and 22

d 8 and 11

6 **F Telomerase associated proteins Dyskerin, hGAR1, hNOP10, hNHP2 are mainly involved in _____.**

a maturation and stability of Telomerase

b binding to telomerase RNA and/or its oligomerization

c Association with active telomerase

d Random function

7 **G Which gene is found mutated in myeloproliferative disorder?**

a Rb

b Cyclin D1

c B-RAF

d JAK-2

8 **H Which fusion gene is most frequent in prostate cancer?**

a BCR-ABL

b TMPRSS2-ERG

c BCAM-AKT2

d AML-ETO