

KATHMANDU UNIVERSITY
End Semester Examination [C]
June, 2018

Level : B.Tech.
Year : II

Course : BIOT 205
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date JUN 18 2018

SECTION "A"

[10 Q. × 0.5 = 5 marks]

Choose and tick (✓) the most appropriate answer.

1. One major goal of modern cancer therapy is to identify small molecules that can be used to inhibit the products of specific cancer-critical genes. If you were searching for such molecules, you would design
 - Inhibitors for products of oncogenes
 - Inhibitors for products of tumor suppressor genes
 - Both of the above
 - Inhibitors for products of proto-oncogenes
2. Apoptotic program that depends on the release into the cytosol of proteins from the mitochondrial membrane space is
 - intrinsic Pathway
 - extrinsic Pathway
 - innate Pathway
 - JAK-STAT Pathway
3. Paired chromosomes in meiosis in immature amphibian eggs, in which the chromatin forms large stiff loops extending out from the linear axis of the chromosome is
 - polytene Chromosomes
 - mitotic Chromosome
 - lampbrush Chromosome
 - nucleosome
4. The unique form of cell division that segregates homologs
 - Meiosis I
 - Mitosis
 - Meiosis II
 - Amitosis
5. Second messenger which is lipid soluble and diffuses in the plane of plasma membrane
 - cyclic AMP
 - IP3
 - Ca²⁺
 - diacylglycerol
6. The portion of the nuclear envelope that is continuous with the endoplasmic reticulum and is studded with ribosomes on its cytosolic surface
 - outer nuclear membrane
 - nuclear lamina
 - inner nuclear membrane
 - inter-membrane space
7. Labyrinthine membrane-enclosed compartment in the cytoplasm of eukaryotic cells, where lipids are synthesized and membrane-bound proteins and secretory proteins are made up of
 - golgi Complex
 - endoplasmic Reticulum
 - ribosome
 - nucleus
8. What kind of mutations in the Ras gene could lead to hyperactive Ras?
 - I. Mutations that stimulate Ras to bind the Ras GTPase-activating protein
 - II. Mutations that decrease the ability of Ras to hydrolyze GTP
 - III. Mutations that block Ras binding to Ras-GEF
 - I
 - I & III
 - II
 - II & III
9. What is 'study of ageing' called?
 - Gerontology
 - Geriatrics
 - Anthropology
 - Ethnology

10. Half of all cancers involve mutations of the
[] p53 gene [] p56 gene [] PDGF gene [] APC gene

SECTION "B"

[5 Q. × 1 = 5 marks]

Fill in the blanks

1.help to inhibit free-radical production and thus protect cell from damage.
2. General term for a signal molecule that helps coordinate growth and development in plants:
3. A linear chain of protein subunits joined end to end, which associates laterally with other such chains to form cytoskeletal components.....
4. Inactive form of protein kinase A consists of two regulatory and two.....subunits.
5. Microvilli are.....of cell membrane.

SECTION "C"

[10 Q. × 1 = 10 marks]

Define in one sentence.

1. Angiogenesis
2. Tight junction
3. Polyribosomes
4. Neurotransmitter
5. Heterochromatin
6. Autophagic vacuoles
7. Thylakoids
8. F₁ particle
9. Immunotoxin
10. Calmodulin

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Time : 2 hrs.30 mins.

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F.M. : 55

SECTION "D"

(Long answer questions)

[3 Q. × 7 = 21 marks]

1. Describe the necessity of homolog pairing & segregation in meiosis along with the unique features that enable the process. How is metaphase-to-anaphase transition regulated?
2. Describe the different types of cell signaling. How do the secondary messengers relay the messages into the target cell within the cytoplasm?
3. What is ageing? Describe the different theories of ageing which support the ageing in animals.

OR

Describe the most popular model of plasma membrane. Give the detail account of functional activities of plasma membrane with the help of suitable diagrams.

SECTION "E"

(Short answer questions)

[6 Q. × 4 = 24 marks]

4. Write short notes on:
 - a) Vesicle coating for compartmental diversity
 - b) Crossing over
 - c) Check points
 - d) Ribosome
 - e) Polytene chromosome
 - f) Ultrastructure of chloroplast
5. Give **TWO** major differentiates between:
 - a) Diffusion and facilitated diffusion
 - b) Cell Signaling in Plants & Animals[2 Q. × 2 = 4 marks]
6. Explain why/how for the following:
 - a) Individuals who inherit one normal and one inactive copy of a tumor suppressor gene are more likely to develop cancer than individuals with two normal copies
 - b) Vertebrate cells use several different Cdks to manage the various transitions in the cell cycle, yet budding yeast is able to get by with a single Cdk
 - c) The cell theory does not cover the viruses.[3 Q. × 2 = 6 marks]

