KATHMANDU UNIVERSITY
End Semester Examination
March/ April, 2017

Marks Scored:

Level : B. Tech.
Year : II
Course : BIOT 205
Semester: I
Exam Roll No. :
Time: 30 mins.
F. M. : 20
Registration No.:
Date APR 10 2017

SECTION "A"
[10 Q × 1 = 10 marks]

Choose and tick (√) the most appropriate answer

1) One of these macro-molecules present in mitochondria are associated with inducing apoptosis?
[ ] ANTs
[ ] Cytochrome C
[ ] VDACs
[ ] Cytochrome D

2) During cellular signaling and differentiation during compound eye formation in drosophila, R8 photoreceptor neurons does not induce neighboring cells to become?
[ ] R2 [ ] R5 [ ] R6 [ ] R7

3) One of these pathways to and from trans Golgi network has not been successfully yet been characterized?
[ ] Trans Golgi to early endosome
[ ] Trans Golgi to plasma membrane
[ ] Early endosome to trans Golgi
[ ] Plasma membrane to trans Golgi

4) Visible spectrum used by plants for photosynthesis ranges from .....nm?
[ ] 220-380 [ ] 380-750 [ ] 750-840 [ ] 780-920

5) Purple and green non sulphur bacteria are the example of
[ ] Photoautotrophs
[ ] Chemoautotrophs
[ ] Photoheterotrophs
[ ] Chemoheterotrophs

6) One of these proteins is not associated with the making of histone octamers?
[ ] H2A [ ] H2B [ ] H4 [ ] H5

7) One of these chemical compounds is not an example of neurotransmitters?
[ ] Adrenaline [ ] Serotonin [ ] Noorphine [ ] Dopamine

8) One of these is not major component of chromatin?
[ ] DNA [ ] RNA [ ] Calcium [ ] Proteins

9) One of these is not the component of ETC operating in chloroplast?
[ ] P-680 [ ] P-700 [ ] Cytochrome C [ ] Cytochrome B

10) One of these genes is responsible for encoding viral proteins or virulence factors in host?
[ ] *Gag* gene [ ] *Pol* gene [ ] *Itr* gene [ ] *Onc* gene

SECTION "B"

[5 Q. × 1= 5 marks]

Fill in the blanks:

11) ..... % of membrane proteins are of intrinsic types?

12) Repression of DNA is largely controlled by ..... organic group?

13) Virtually pure nucleus can be extracted upon gradient centrifugation with the addition of .....?

14) ..... is an enzyme that converts cyclic AMP into AMP?

15) ..... is a principle target of protein kinase C?

SECTION "C"

[5Q. × 1 = 5 marks]

Define in one sentence.

16) SNARE complex:

17) Endo-symbiosis:

18) Dark reaction:

19) Pheromones:

20) Transmembrane domain:

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SECTION "D"

Attempt *ANY FIVE* questions:

1. a. Introducing very briefly about your understanding on "Evolution of life", relate it with the "Moore's Law" with as much evidence you can garner"? [4]
   b. Illustrating transport principles in a general consensus with regards to entropy, explain in detail about osmosis at the cellular level? [3]

2. a. Discuss about the structure, function and well labelled architecture of mitochondria with protein involved therein and their functions? [4]
   b. "Enzymes involved in peroxisomes acts in sequential synastry" prove this statement with your understanding of cell biology? [3]

3. a. Elaborate about how proteins destined to inner mitochondrial membrane are processed and targeted from Golgi apparatus? [4]
   b. Illustrate the role of different transporters and channels present in tonoplast? [3]

4. a. Discuss in detail about the evolution of sex chromosome, relating it with its size? [4]
   b. With a brief introduction on calcium signaling, give a detailed overview on "Inositol phospholipid pathway"? [3]

5. a. With an evidence of presence of tumor suppressor gene elaborate about the working mechanism of retinoblastoma for tumor suppression? [4]
   b. Explain in detail about the role of chromosomal translocation with special reference to "Philadelphia chromosome" for the development of cancer? [3]

6. a. Give a detailed overview on different phases of cell cycle, its importance, significance and processes involved therein? [4]
   b. With the illustration of different kinds of movement supported by fluid mosaic model, give an evidence and explanation supporting it? [3]

7. a. With an illustration of different kind of proteins produced by oncogene, give a detailed overview on different kinds of mutated RPTKs produced by oncogenes? [4]
   b. Introduce basic structure and components of cell wall and differentiate it in case of eukaryotic and prokaryotic system? [3]

8. Differentiate between (*ANY FIVE*) [5 Q. × 2=10 marks]
   a. Primary and secondary active transport
   b. Primary and secondary constriction
   c. Carcinoma and Sarcoma
   d. Cellulose and Starch
   e. Euchromatin and Heterochromatin
   f. Chloroplast and Etioplast

9. Explain why/how for (*ANY FIVE*) [5 Q. × 2=10 marks]
   a. Lysosomes are present at the tip of sperm cells?
   b. Even when some prokaryotes which lack mitochondria can perform respiration?
   c. Initial stages of salinity stress in equivalent to osmotic stress in plant root system?
   d. Plant cell needs large central vacuole?
   e. Erythrocytes are exceptions to normal cells?
   f. Physiological significance of fluidity of plasma membrane?