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RAIN SEMESTER EXAMINATION, 2015/2016

BCH 316: NEUROCHEMISTRY

October 2016 Time allowed: 3 hrs

Instruction : Answer question ONE and any other two questions

1 (i)What do you understand by the term (a) neuromodulators (b) depolarization (c) hyperpolarization (d) excitable cell (e) resting membrane potential

(ii) Distinguish between a voltage-gated ion channel and a ligand-gated ion channel

(iii) Compare and contrast the the trimeric G proteins (Gs) which is associated with metabotropic receptors and trasducin that is involved in the visual process

(v) Name any five small molecule neurotransmitters and give their chemical structures .

(vi) Summarize the events that occur during synaptic transmission of named neurotransmitter

2. (i) Explain the "All- or –Nothing " principle as it applies to the depolarization process in a nerve cell
(ii) Compare and contrast the two major types of postsynaptic receptors
(iii) Give the name and their sources of three neurotoxins that act on (Inhibit) Na^+ Channels, two that act on K^+ channels and one that on a postsynaptic receptor.

3 (iii) Summarize the events that lead to the generation of an action potential in a typical neuron
(iv) What properties must a compound have for it to be considered as a neurotransmitter.

5. (i) State briefly the sequence of events involved in phototransduction in rods and cones in response to light stimuli
(ii) the data in the table below was recorded for an excitable cell in a *C. elegans*. Estimate the resting membrane potential of 37^0C for this cell using the appropriate equation

Ion	Intracellular (mM)	Extracellular (mM)
Na^+	14	142
K^+	140	4
Cl^-	21	110

Assume that the permeability co-efficient $pk^+ = 1$, $pNa^+ = 0.04$, $pCl^- = 0.45$