Enrollment No._____

NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Science
Program/s: Biomedical Science
Year: 5th **Semester:** IX
Examination: End Semester Examination
Examination year: December - 2021

Course Code: BM513 **Course Name:** **Neurobiology III**
Date: 06/12/2021 **Total Marks:** 40
Time: 8:30 am to 10:30 am **Total Pages:** 2

Instructions:

- *All questions are compulsory*
- *Draw diagram wherever required.*
- ** COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping*

Q. No.	Details	Marks	COs*	BTL#
Q.1	**A) Choose the correct options (5)** 1. Which of the following is not an outcome of increased complexity of the brain during evolution? a. Increase in vascularity b. Changes in time course of development c. Changes in relative size of different parts of the brain d. Neurochemistry 2. Brain achieves 80% of its adult weight by what age? a. At birth b. By 2 years of age c. By 3-4 years of age d. By 6 years of age 3. Which of the following is not a feature of cerebral cortex development? a. Differs in males and females b. Is not genetically determined *in utero* c. Highly dynamic over time d. Varies across different cortical areas. 4. What is the correct order of cognitive development in infants? i. Recognition of upright faces ii. Recognition of Mother's Face since Birth iii. Grammatical rules learning	**10**	CO1, CO2, CO3, CO4, CO5	BT1, BT2, BT3

	iv. Fear for unfamiliar people a. i, ii, iii, iv b. ii, i, iii, iv c. ii, i, iv, iii d. ii, iv, ii, iii 5. Adult values of synaptic density are attained by a. 10-11 years of age b. 15 years of age c. 6-7 years of age d. By 30 **B) True or False. Justify your answer. (5)** 1. During development, brain shows left–right asymmetries. 2. Memory of events that occur at a specific place and time is a type of semantic memory. 3. NMDA receptors are the main ones activated during LTP. 4. Excitatory ionotropic ligand-gated neurotransmitter receptors induce the movement of Na^+ and K^+ while inhibitory ionotropic ligand-gated neurotransmitter receptors carry Cl^-. 5. During hyperpolarization, the intracellular space of the membrane becomes more negative than the resting potential.			
Q.2	**Short answer questions (2*5 = 10)** 1. What is the progress of myelination during development? 2. Why is animal communication important with respect to evolution? 3. Mention any 2 effects of aging on prefrontal cortex. 4. Explain the pathophysiology by which hyperkalaemia leads to dangerous arrhythmias. 5. Differentiate between Nernst potential and GHK equation.	**10**	CO1, CO2, CO3, CO4, CO5	BT1, BT2, BT3
Q.3	**Answer any 5 in detail (4*5 = 20)** 1. Which are the major structural and functional brain changes that occur with aging? 2. Write a short note on ARAS in context of top-down and bottom-up approach. 3. Explain the pathway that leads to long term sensitization OR short-term sensitization (either one). 4. What is the role of striatum and amygdala in memory? 5. With the help of an example, explain the setup of a voltage clamp experiment. 6. Discuss the phases and propagation of an action potential.	**20**	CO1, CO2, CO3, CO4, CO5	BT1, BT2, BT3

**********End of Question Paper**********