U7769

Reg. No.: .....

Name:.....

University of Kerala

First Semester Degree Examination, November 2024
Four Year Under Graduate Programme
Discipline Specific Core Course
ZOOLOGY

UK1DSCZOO104 - Human Nervous System and Behaviour

Academic Level: 100-199

Time:2Hours **Max.Marks:56**

Part A.

Answer All Questions, Objective Type. 1 Mark Each.
(Cognitive Level: Remember/Understand)
6 Marks. Time: 5 Minutes.

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
1.	Pyramidal cells are predominantly found in A) Cerebellum B) Cerebral cortex C) Spinal cord D) Brain stem	Remember	1
2.	The sodium potassium pump A) Creates a negative potential inside the neuron by moving three sodium ions out of the neuron and two potassium ions into the neuron. B) Creates a negative potential inside the neuron by moving two sodium ions out of the neuron and three potassium ions into the neuron. C) Creates a positive potential inside the neuron by moving three sodium ions out of the neuron and two potassium ions into the neuron. D) Is a passive mechanism that requires no metabolic energy.	Remember	2
3.	A patient has great difficulty in articulating words but no difficulty in comprehending spoken and written language, which probably indicates damage in: A) Broca's area B) Wernicke's area C) Corpus callosum D) Pons Varolii	Understand	1

4.	Which of the following techniques uses X-rays? A) EEG B) CT scan C) MRI D) fMRI	Understand	2
5.	Which of the following statements is not true? A) Stereotactic brain surgery uses MRI images. B) Brain lesioning is irreversible. C) Deep brain stimulation is safer than brain lesioning. D) Transcranial magnetic stimulation is an invasive technique	Remember	3
6.	Which of the following is a neuron cell? A) Stellate cells B) Astrocytes C) Ependymal cells D) Schwann cells	Remember	3

Part B.

Answer All Questions , Two-Three sentences. 2 Marks Each.

(Cognitive Level: Remember/Understand/Apply)

10 Marks. Time: 20 Minutes

<table>
<tr><th>Qn. No.</th><th colspan="2">Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td rowspan="6">7.</td><td colspan="2">Match the following</td><td></td><td></td></tr>
<tr><td>A</td><td>B</td><td rowspan="5">Remember</td><td rowspan="5">1</td></tr>
<tr><td>a. Corpus callosum</td><td>1. Limbic system</td></tr>
<tr><td>b. Hippocampus</td><td>2. Relay centre</td></tr>
<tr><td>c. Thalamus</td><td>3. Basal ganglia</td></tr>
<tr><td>d. Caudata nucleus</td><td>4. Cerebral commissure</td></tr>
<tr><td>8.</td><td colspan="2">What are Schwann cells? Describe their functions.</td><td>Remember</td><td>2</td></tr>
<tr><td>9.</td><td colspan="2">How and where does saltatory conduction of impulses occur?</td><td>Remember</td><td>2</td></tr>
<tr><td>10</td><td colspan="2">Locate Broca's area and Wernicke's area in the brain.</td><td>Understand</td><td>3</td></tr>
<tr><td>11.</td><td colspan="2">Describe how stereotactic surgery can be used in the treatment of neural disorders.</td><td>Apply</td><td>4</td></tr>
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Part C.

Answer all 4 questions, choosing among options (a) and (b) within each question.

Short Answer. 4 Marks Each. (Cognitive level: Remember/Understand/Apply/Analyse)

16 Marks. Time: 35 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
12.	(a) Elaborate on the Wernicke-Geschwind model of language processing. OR (b) Describe transcortical aphasia.	Understand	1

13.	(a) Classify neurons based on their function. OR (b) Explain the differences between somatic and visceral reflexes, including suitable examples.	Understand	2
14.	(a) Why is transmission at chemical synapses unidirectional and what is the significance of this? OR (b) What is the cerebral cortex, and how is it specialized in its structure and function?	Analyse	3
15.	(a) Explain how EEG can be used to analyze brain functions. OR (b) Connect the variations in heart rate to the functioning of the autonomic nervous system.	Apply	4

Part D.

Answer all 4 questions, choosing among options (a) and (b) within each question.
Long Answer. 6 Marks Each (Cognitive Level: understand/Apply/Analyse/Evaluate/Create)
24 Marks. Time: 60 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
16.	(a) Outline the divisions of the human nervous system with brief descriptions. OR (b) Describe the limbic system, including its major components and their physiological functions.	Understand	1
17.	(a) Explain the ionic mechanisms of action potential production in a neuron. OR (b) Identify three neurotransmitters in the brain and mention their physiological functions.	Understand	2
18.	(a) 'Aphasia depends on the area of the brain that is damaged.' Analyse the statement by providing two examples. OR (b) 'The cerebral hemispheres show a considerable degree of lateralization of function.' Analyse this statement citing two examples.	Analyse	3
19.	(a) Identify and provide a brief description of two imaging techniques that can be used by a physician to analyze the functioning of the human brain. OR (b) Explain brain lesioning and deep brain stimulation techniques, with special reference to the conditions in which they can be applied in neuroscience.	Apply	4