

(LD 123)

OCTOBER 2013

Sub. Code: 2020

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

PAPER III – NERVOUS SYSTEM AND SPECIAL SENSES

Q.P. Code : 202020

Time: Three Hours

Maximum: 100 marks

I. Essay:

(2X10=20)

1. Tabulate the neurological findings in *hemi-section of the spinal cord at the level of second lumbar spinal segment on the left side (L2, left)* under the following headings: sensory system, motor system, superficial and deep reflexes. (Specify the reflexes).
2. Describe the following terms: Habituation, Sensitization, Classical and Operant conditioning. What type of 'memory' do these phenomena represent? Discuss the molecular mechanisms of any two of these 4 phenomena, with experimental evidences.

II. Short Questions:

(8X5=40)

1. Discuss the physiological role of Hippocampus.
2. State the origin and termination of climbing fibres and their role in cerebellar function.
3. Describe the nuclei, internal and external connections of Basal ganglia. State the pathophysiology of Parkinson's disease.
4. Discuss the role of muscle spindles. What is the role of gamma motoneurons in muscle spindle function?
5. Discuss the endogenous mechanisms for pain control.
6. Classify the receptors for the major excitatory neurotransmitter in the brain. How are they different from each other functionally?
7. Describe the mechanism of action of:
 - (a) Local anaesthetics
 - (b) Succinyl choline
8. Describe the term 'hemi neglect'. What lesion leads to this condition?

III. Reasoning Out:

(4X5=20)

1. With the aid of a diagram discuss the visual field defects that result from various lesions of the optic pathway. Give reasons for your answer.
2. State the results of 'tests of hearing' in a patient who has:
 - (a) Middle ear infection on the left side
 - (b) Cochlear disease on the left side
3. Describe the features of Decorticate and Decerebrate rigidity. If a patient who shows signs of decorticate rigidity develops decerebrate posturing, what is the prognosis? In an experimental preparation, how can you prove that decerebrate rigidity is reflexive?

(PTO)

4. What are the features of 'REM' sleep? What happens to muscle tone during this phase and why?

IV. Very Short Answers:

(10X2=20)

1. How are frequency and intensity of sound coded for in auditory sensation?
2. Which are the inhibitory neurotransmitters which are ionotropic?
3. Classify cholinergic receptors and state one location for each.
4. What is the pathophysiology of organophosphorous poisoning?
5. Define astigmatism. How is it corrected?
6. What is 'Substantia gelatinosa'? What is its significance?
7. What happens to direct and consensual pupillary reflexes in (a) Right optic nerve lesion (b) right oculomotor nerve lesion?
8. What are the receptors responsible for: (1) inverse stretch reflex (2) flexion withdrawal reflex?
9. List the extrapyramidal tracts.
10. With the aid of a diagram show the location of the primary sensory cortex in the brain.
