

University Medicine

Name: \_\_\_\_\_ Score: \_\_\_\_\_

1. Which receptor acts within milliseconds?
  - ☐ Most serotonin receptors
  - ☐ The  $\beta$ -adrenergic receptor
  - ☐ The muscarinic ACh receptor
  - ☐ The nicotinic ACh receptor, an ion channel
2. The right half of the cord is cut at T8. Where is pain sensation lost?
  - ☐ Only at T8
  - ☐ On both sides
  - ☐ On the left, from 1–2 segments below T8
  - ☐ On the right, below T8
3. Each corticospinal tract has about 1 000 000 fibres, and 85% cross at the pyramids. How many do not cross?  
\_\_\_\_\_ fibres
4. A pituitary tumour presses up on the optic chiasm. Which defect is typical?
  - ☐ Loss of the left half in both eyes
  - ☐ Loss of the central field only
  - ☐ Blindness in one eye
  - ☐ Loss of both outer (temporal) fields
5. The adrenal medulla releases 50  $\mu\text{g}$  of hormone, 80% of it adrenaline. How many  $\mu\text{g}$  of nora-drenaline is that?  
\_\_\_\_\_  $\mu\text{g}$
6. Deep N3 sleep is concentrated in the second half of the night.
  - ☐ True      ☐ False
7. Weakness of the whole left side of the face with a weak right arm and leg. Where is the lesion?
  - ☐ The right cortex
  - ☐ The left cortex
  - ☐ The left brainstem (pons)
  - ☐ The cervical cord

8. ACh always excites the cell it acts on.

☐ True      ☐ False

9. A half-cord lesion is at T6, and pain loss starts 2 segments lower. At which thoracic segment does it start? Give the number.

\_\_\_\_\_

10. Stroking the sole makes the big toe go up. What does this suggest?

☐ An upper motor neuron lesion

☐ A lower motor neuron lesion

☐ A normal adult

☐ A cerebellar lesion

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**1. The nicotinic ACh receptor, an ion channel**

Ionotropic receptors are channels and open at once; the others work through G proteins.

**2. On the left, from 1–2 segments below T8**

Pain fibres have already crossed, so the right tract carries pain from the left side of the body.

**3. 150000 fibres**

15% of 1 000 000 = 150 000.

**4. Loss of both outer (temporal) fields**

The crossing nasal fibres carry the temporal fields, and they are the ones squeezed.

**5. 10 µg**

20% of 50 µg = 10 µg.

**6. False**

N3 dominates the first two cycles; REM grows towards morning.

**7. The left brainstem (pons)**

Crossed signs, a cranial nerve on one side and the body on the other, mean the brainstem, on the side of the cranial nerve.

**8. False**

It excites skeletal muscle through nicotinic receptors but slows the heart through M2 receptors.

**9. 8**

T6 + 2 = T8, because pain fibres rise 1–2 segments before crossing.

**10. An upper motor neuron lesion**

The Babinski sign appears when corticospinal control is lost.