

1. Which receptor acts within milliseconds?

- ☐ Most serotonin receptors
- ☐ The β -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 μg of hormone, 80% of it adrenaline. How many μg of nora-drenaline is that?

_____ μg

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

- ☐ 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

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.