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 noradrenaline 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

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☐ 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.

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