This is an open-book exam, meaning you can use the course material and other sources. However, you still need to adhere to good academic practice. In particular, presenting someone else's text or images as your own or copying text directly from sources – even from your own work – is not allowed. Your answers will be automatically inspected by the Turnitin plagiarism checker, so please do not copy even for short fragments of text. If you use quotes or figures from external material, the source must be appropriately and accurately indicated.

Answer **three** of the following essay questions, and return your answers as a PDF file by 16:00.

1. **Neuropharmacology (6 p)**

   Describe the variety of ways in which drugs affect the central nervous system.

2. **Stress (6 p)**

   Describe stress reaction separately as a psychological and neurophysiological construct. Then discuss how it may be aberrant in anxiety and depressive disorders (psychological level) and what the underlying mechanisms could be (neurophysiological level).

3. **Receptive field (6 p)**

   Answer the following questions concisely:

   a) What is meant by the concept *receptive field* of a cell in the sensory domain?

   b) Describe how the receptive fields of the following cells differ and what kind of visual stimuli optimally activate each of them:

      • ganglion cell in the retina

      • simple cell in cortical area V1

      • hypercomplex cell in the visual cortex.

   c) What is a "grandmother cell"? What different kinds of sensory input would activate such a cell?

   d) What is meant by the concept *mirror neuron*? Could its activation properties be described with the help of the concept *receptive field* or its generalisation?

4. **Cerebellum in motor control (6 p)**

   Explain the role of the cerebellum in motor control. How does it interact with other parts of the brain to achieve this task?