

※ 注意：請於試卷內之「非選擇題作答區」依序作答，並應註明作答之部份及題號。

1. Please explain below terms.
  - (1) Synaptic plasticity (2 points)
  - (2) Basic neuronal structure (3 points)
  - (3) Action potential (2 points)
  - (4) Cerebral cortical structure (3 points)
  - (5) Synaptic transmission (3 points)
  - (6) Key ions regulating membrane potential (3 points)
2. Please list all cell types in cerebral cortex (9 points)
3. Please describe an example regarding how chemical transmission affects behaviors (10 points)
4. Please describe reflex action and reflex arc. (10 points)
5. What is the difference between afferent neurons and efferent neurons? (5 points)
6. Please design a mouse experiment to demonstrate that hippocampal neurogenesis is critical for pattern separation during memory formation. (15 points)
7. Please state what happens to the brain during learning and memory and what can be used to define these processes. Please provide your understandings from molecular, cellular, circuitry and behavioral perspectives. (15 points)
8. The electroencephalogram (EEG) is a measurement that enables us to glimpse the activity of the cerebral cortex. How does the nervous system generate the fluctuations and oscillations of an EEG? Please also state your opinions on functional relevance of these synchronous brain rhythms. (10 points)
9. Please use classical conditioning and operant conditioning behavioral paradigms to explain the generation of motivated behaviors. What can you obtain by using these behavioral paradigms for study? (10 points)

試題隨卷繳回