

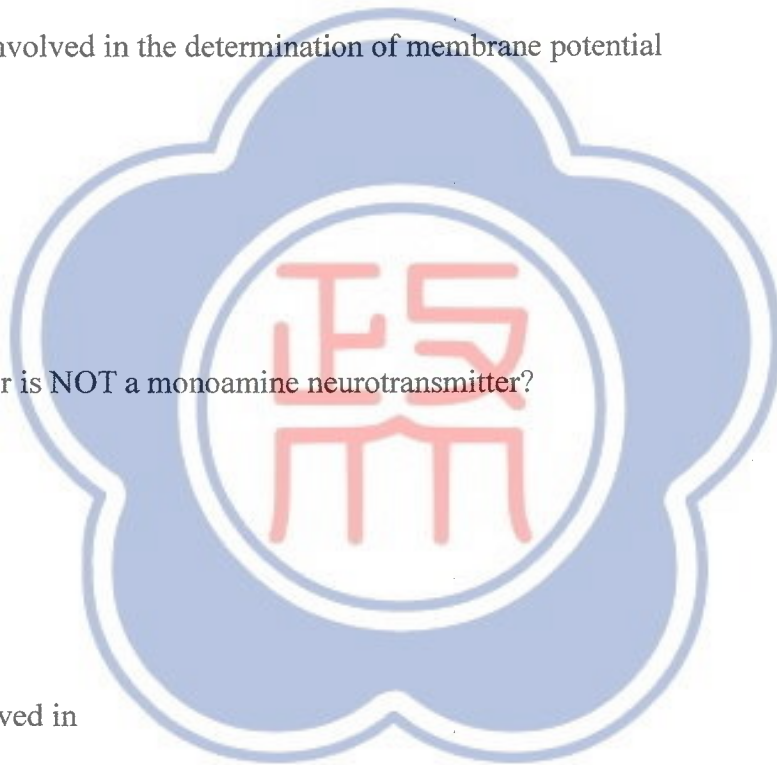
考試科目	神經生物學	系所別	神科所	考試時間	2月5日(一) 第四節
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## 一、選擇題(每題3分，共30分)

- Which of the following organism does NOT have nervous system?  
(A) nematode  
(B) fruit fly  
(C) sponges  
(D) star fish  
(E) all above organisms have nervous system.
- What type of cell is NOT derived from neuroepithelial lineage?  
(A) GABA interneurons  
(B) microglia  
(C) astrocyte  
(D) oligodendrocytes  
(E) norepinephrine neurons.
- Which of the following is the principal neurotransmitter at the neuromuscular junctions?  
(A) acetylcholine  
(B) glutamate  
(C) dopamine  
(D) serotonin  
(E) epinephrine.
- Which of the following is NOT the common features of neurodegenerative disorders?  
(A) decrease of synaptic number  
(B) abnormal protein aggregation  
(C) neuronal cell death  
(D) disrupted synapse formation  
(E) neuroinflammation.
- The impairment of neurotransmission could be due to  
(A) the inhibition of neurotransmitter biosynthesis  
(B) the defect of vesicular neurotransmitter transporter  
(C) the mutation of the neurotransmitter receptor  
(D) the disruption of ionic gradients across cell membrane

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- (E) all above.
6. The influx of which ions mediates inhibitory effects on neuroactivity
- (A) sodium ion
  - (B) potassium ion
  - (C) calcium ion
  - (D) magnesium ion
  - (E) chloride ion.
7. Which ions are NOT involved in the determination of membrane potential
- (A) sodium ion
  - (B) potassium ion
  - (C) calcium ion
  - (D) magnesium ion
  - (E) chloride ion.
8. Which neurotransmitter is NOT a monoamine neurotransmitter?
- (A) epinephrine
  - (B) GABA
  - (C) dopamine
  - (D) serotonin
  - (E) norepinephrine
9. Hypothalamus is involved in
- (A) spatial recoding
  - (B) motor coordination
  - (C) circadian rhythm
  - (D) sensory information integration
  - (E) all above
10. Which of the following cells cannot be found in the brain
- (A) Schwann cells
  - (B) GABAergic interneurons
  - (C) oligodendrocytes
  - (D) endothelial cells



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(E) all above cells can be found in the brain.

二、名詞解釋 (30 分)

1. excitatory post synaptic potential
2. blood brain barrier
3. synaptic vesicle cycle
4. memory consolidation
5. neurotrophic factor

三、問答題 (每題 10 分，共 40 分)

1. Please describe the biological functions of the following cell types and their relationship with neurons (a) astrocyte (b) microglia (10pts)
2. Please compare the differences in structure and biochemical properties between an ion channel-coupled receptor and a G protein-coupled neurotransmitter receptor (10pts).
3. Describe the roles of the following tissues in motor functions (a) motor cortex (b) cerebellum (c) ventral horn of spinal cord (10pts)
4. Explain (a) how an action potential is initiated and propagated in a neuron (b) the cellular components and the functions of myelin sheath (10pts)

備

註

- 一、作答於試題上者，不予計分。
- 二、試題請隨卷繳交。