

考 試 科 目	知覺與生理心理學	系 所 別	心理學系/實驗與發展組	考 試 時 間	2 月 5 日(五) 第四節
---------	----------	-------	-------------	---------	----------------

知覺心理學 (50%)

- 一、視覺系統對於外界訊息的處理，在不同階段產生不同的視覺表徵 (representation)，視覺神經系統的反應型態，亦可視為視覺表徵。以凝視著一棵樹的垂直樹幹為例，請說明此一視覺刺激，在視覺皮質第一區 (V1) 將形成什麼視覺表徵？試參考 V1 的組織特性加以說明。 (5%)
- 二、續上題，若所凝視的樹幹，部分被招牌擋住，以致於視網膜上樹幹的影像並不完整，然而觀察者仍可毫不費力的知覺到完整的樹幹。請說明：(1) 根據完形 (Gestalt) 心理學派的觀點，何種知覺組織原則可解釋此一現象？(2) 若根據 Helmholtz 的無意識推理 (unconscious inference) 理論，上述知覺結果如何產生？ (10%)
- 三、若飛機的自動駕駛系統故障，駕駛員只能手動控制降落，這時有何視覺訊息可幫助操控，以及判斷飛機是否可安全降落而不致墜毀？試以相關理論加以說明。 (10%)
- 四、大小知覺與深度知覺有何關聯性？試說明其關聯性，並舉出一項與深度知覺有關的大小錯覺加以說明。 (10%)
- 五、當人們正在專心進行複雜的電腦遊戲時，附近出現大音量的噪音並不會造成強烈干擾，然而在進行簡單的遊戲時，同樣的聲音却會產生較大的干擾。試以注意力 (attention) 相關理論觀點，解釋此一現象。 (10%)
- 六、當音響系統的頻寬不足時，可能造成較低頻率的基頻 (fundamental frequency) 聲音無法在此音響系統播出，然而這並不影響聽者知覺到的音高或音樂旋律。試以聽覺系統的特性，解釋此一現象。 (5%)

備 註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。
-----	-------------------------------

考試科目	知覺與生理心理學	系所別	心理學/實驗發展組	考試時間	2月5日(五) 第四節
------	----------	-----	-----------	------	-------------

生理心理學 (50%)

一、選擇題：(2% x 10 = 20%)

1. Regarding to the relationship between brain and behavior, which of the following statements is TRUE?

- (a) Throughout the life span, behavioral function is totally determined by biological factor (in genetic) as begun when the individual is born.
- (b) The development of brain is based on the genetic code of each animal and not influenced by environmental factor/change.
- (c) The structure and function of the brain can be changed as resulted by the individual dynamically adapts to the unpredictable environment for survival.
- (d) The behavioral function may be changed due to the internal physiological factor or the external environmental factor, however, that have no influence to re-shape the structure of brain and re-adjust neural activity.

2. Alzheimer's disease : depression = _____ :

- (a) psychiatric disorder : neurological disorder
- (b) neurological disorder : psychiatric disorder
- (c) neurological disorder : neurological disorder
- (d) psychiatric disorder : psychiatric disorder

3. Which of the following terms is related to that synapses grown stronger or weaker depend on their effectiveness in driving their target cell?

- (a) Kluver-Bucy syndrome
- (b) Hebbian synapses
- (c) hypofrontality hypothesis
- (d) Pavlovian conditioning

4. forebrain : hindbrain = _____ :

- (a) thalamus : cerebellum
- (b) basal ganglia : pons
- (c) hypothalamus : pons
- (d) all above
- (e) none of above

5. The neurochemical condition of _____ in the brain is associated to the anxiety disorder.

- (a) too much dopamine
- (b) short of dopamine
- (c) too much GABA
- (d) short of GABA

6. A violent person with sever aggressive behavior is attributed to lower level of _____ than the normal subject.

- (a) androgen
- (b) estrogen
- (c) 5-HT
- (d) dopamine

考 試 科 目	知覺與生理心理學	系 所 別	心理系/實驗與發展組	考 試 時 間	2 月 5 日 (五) 第四節
---------	----------	-------	------------	---------	-----------------

7. The homeostasis of feeding, drinking, and sexual behaviors are mostly associated to the _____ of the brain.

- (a) cerebral cortex (b) cerebellar cortex
(c) hippocampus (d) hypothalamus

8. Which of the followings is used to characterize different stages of sleep from awake.

- (a) electromyography (EOG) (b) electroencephalography (EEG)
(c) electrocardiography (EKG) (d) transcranial magnetic stimulation (TMS)

9. In terms of epigenetics, which of the following statement is false?

- (a) to study the factors that affect gene expressions with changing the underlying DNA nucleotides sequence of the genes
(b) Poor maternal care induces methylation of a stress-response gene that may cause a lifelong heightened response to stress.
(c) Animal behavior models are needed to **measure** behaviors changed by experimental manipulation in the epigenetic study.
(d) The epidemic study provides the evidence that is important to understand the relationship between the brain and behavior especially focusing in the early stage of lifespan.

10. Which of the following brain regions can you record a stable long-term potentiation (LTP) in the rat with the performance of spatial memory in a water maze? (as compared the rat which did not have such a spatial memory)

- (a) striatum (b) amygdala (c) hippocampus (d) cerebellum

二、解釋名詞：(5% x 4= 20 %)

1. tolerance vs. sensitization
2. glutamate
3. anterograde vs. retrograde amnesia
4. learned helplessness

三、問答題 (10%)

請就生理心理學或當代行為神經科學的觀點，論述上癮行為 (addictive behavior) 及其神經機制 (含以動物模式進行相關的研究)。