

科目：認知神經科學(4001)

校系所組：中大認知與神經科學研究所

陽明神經科學研究所認知神經科學組

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**Cognitive Neuroscience (part1, 50%, 請精簡作答)**

1. 何謂工作記憶(working memory)? 請舉靈長類的動物研究證據說明之。(3%)
2. 請說明 Alan Baddeley 工作記憶模型(working memory model)及其各成份歷程的功能。(4%)
3. 何謂 error-related negativity (ERN)? 請說明其反映的心理歷程及最可能的腦神經相關。(3%)
4. 何謂心理辭典(mental lexicon)? 請舉實驗證據說明其心理及神經生物機制。(3%)
5. 請以不同型態的失語症(aphasia)說明語言的中樞歷程與神經機制。(3%)
6. 請說明失讀症(dyslexia)與失語症的差別，並舉一神經造影研究說明其大腦神經網路的表現形態。(4%)
7. 注意力(attention)的功能為何? 請舉兩種最常用的實驗典範說明。(4%)
8. 何謂視野忽略症狀(visual neglect syndrome)? 請說明其反映的心理歷程及最可能的腦神經相關。(3%)
9. 何謂以物體(object)及空間(space)為基礎的注意力分佈機制，請舉實驗證據說明。(3%)
10. 請以 stop-signal task 說明由上而下的動作抑制(inhibition of action)歷程及其神經機制。(3%)
11. 請舉實驗例證說明小腦(cerebellum)對時間知覺(timing)的影響。(3%)
12. 請說明 Giacomo Rizzolatti 最原始的鏡像神經元(mirror neurons)的發現。其主要功能最可能為何?(4%)
13. 請舉一裂腦研究(split-brain research)說明左右腦的特化功能表現。(4%)
14. 大腦前額葉(prefrontal cortex)主宰著許多高階認知功能，請以其腦結構的分野說明相關功能分佈。(6%)

注：背面有試題

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參考用

**Cognitive Neuroscience (part2, 50%)**

- (1) What is cognitive neuroscience? (2%)
- (2) Explain the evolutionary significance of the different types of cortex (e.g., neocortex versus mesocortex versus allocortex). (6%)
- (3) Once the human brain is past the critical period in development and is fully developed, damage has less impact on its organization. But how would a person losing a limb in an accident in adulthood feel the missing limb, and why might this feeling be triggered by stimulation of the remaining body parts? (4%)
- (4) Briefly describe the limbic system hypothesis and its historical role in the cognitive neuroscience and emotion. (4%)
- (5) In what two ways do the amygdale and hippocampus interact in emotional learning and memory? (4%)
- (6) What is self-referent effect? Which brain region mainly underpins this effect? Why is it important to distinguish the self? (6%)
- (7) What is Theory of Mind? Which task is to test it? Whose neural correlates? What is empathy? What might have been the evolutionary advantage for the development of empathy and theory of mind? (10%)
- (8) What means somatic markers? Whose neural correlates? How might emotion help or impair social decision making? (6%)
- (9) What is neural selection according to Darwin's theory of evolution? (2%)
- (10) What are the three aims of comparative neuroscience? Briefly explain each. (6%)