

Part I. 45%

1. _____ is a type of variable that is left uncontrolled in an experiment, but could contribute to difference in performance. Thus it makes interpretation of the experiment results difficult.
 - a. Independent variable
 - b. Confounding variable
 - c. Controlled variable
 - d. Dependent variable

2. _____ consists of explanatory principles for the phenomenon of interest.
 - a. correlational studies
 - b. dependent variables
 - c. hypotheses
 - d. theories

3. What kind of memory seems to not involve the hippocampus?
 - a. declarative memory
 - b. short-term memory
 - c. procedural memory
 - d. long-term memory

4. Which of the following best describes the relationship between inspection time and intelligence?
 - a. Highly intelligent people tend to increase their inspection time.
 - b. Highly intelligent people have very fast inspection times.
 - c. People with lower intelligence scores have fast inspection times.
 - d. There is no relationship between inspection time and intelligence.

5. According to Endel Tulving, if you needed to remember the name of a book that you borrowed from the library last week, what kind of memory is involved?
 - a. episodic
 - b. semantic
 - c. time-bound
 - d. working

6. Lin won a lottery 10 years ago. Yet, he still is able to recall with great detail and vividness what has happened that day. This is an example of what kind of memory?

- a. constructive
 - b. photographic
 - c. flashbulb
 - d. iconic
7. Which of the following concept suggests that images are simply a byproduct of other cognitive processes?
- a. epiphenomena
 - b. percept
 - c. construals
 - d. deductive code
8. In a computer simulation, the “if” clause includes a set of conditions that must be met in order to implement the “then” clause. What concept is involved in this example?
- a. semantic simulations
 - b. action rules
 - c. declarative procedures
 - d. production rules
9. The finding that all languages draw their basic color terms from eleven color names supports which hypothesis?
- a. categorical relativity
 - b. absolutism
 - c. linguistic relativity
 - d. linguistic universals
10. Gathering all the pieces of evidence leads us to reach a certain conclusion is _____ reasoning
- a. deductive.
 - b. inductive.
 - c. abductive.
 - d. reductive.
11. The ability to realize that two problems have the same underlying structure even though their surface features are different and to adapt the solution for one problem to another is an example of _____
- a. ill-defined problem.

- b. well-defined problem.
 - c. transfer of analogies.
 - d. transparency.
12. Which of the following tasks will produce the best long-term memory for a set of words?
- a. Deciding how many synonyms each word has
 - b. Deciding how many consonants each word has
 - c. Generating a rhyming word for each word to be remembered
 - d. Repeating the words over and over in your mind
13. Consider the following argument:
All university professors are dragons.
Mr. Lin is a university professor.
Therefore, Mr. Lin is a dragon.
This statement is both _____ and _____.
- a. valid; true
 - b. invalid; untrue
 - c. invalid; true
 - d. valid; untrue
14. The sentences, "The boy ravenously ate the pizza," and "The pizza was eaten ravenously by the boy" have the same _____ structure, but have different _____ structure.
- a. shallow; elaborative
 - b. surface; deep
 - c. elaborative; shallow
 - d. deep; surface
15. _____ grammar specifies the alleged correct ways of using structures of the written and spoken language.
- a. Descriptive
 - b. Inferential
 - c. Prescriptive
 - d. Logistical

Part II. 5%

Give an example of an interaction between top-down and bottom-up processes.

Part III. 50%

1. 閱讀下面這篇摘要之後，回答後面的問題

Numerous studies suggest that attention-deficit/hyperactivity disorder (ADHD) is caused by deficits in dopaminergic systems. Furthermore, dysfunctions of prefrontal cortex can impair inhibitory controls of ADHD patients, resulting in their impulsive behaviors. Researchers also find that rats with lesions in the orbitofrontal cortex show deficits in the reversal learning of attentional set-shifting task (ASST), a behavioral test frequently used in human studies to assess the inhibition system. However, the role of orbitofrontal dopamine system in the mechanism responsible for the dysfunctions of inhibitory controls in ADHD patients and animal models remains unknown. In the present study, we manipulated orbitofrontal dopamine activities of spontaneously hypertensive rats, a widely used ADHD animal model, through intra-peritoneal injection of methylphenidate (MPH) and central infusion of haloperidol, and observed performances of animals in ASST. The results show that juvenile SHR_s learned slower than Wistar controls in the first and second reversal learnings of ASST. The deficits could be removed by intra-peritoneal injections of MPH. Furthermore, central infusions of haloperidol in the orbitofrontal cortex blocked the effects of MPH. In conclusion, dopamine manipulations in orbitofrontal cortex can modulate deficits of reversal learning in SHR_s, suggesting a possible involvement of the orbitofrontal dopamine system in the pathology of ADHD.

根據這篇摘要的說法，

- (a) 學者認為那一種大腦認知功能異常會造成注意力不足過動症 (ADHD) 的徵狀？ (5分)
- (b) 那一種神經傳導物質失調可能會造成注意力不足過動症？ (5分)
- (c) 在這篇摘要描述的實驗中，研究者使用了那一種藥物作為此神經傳導物質的agonist？可以直接寫英文名稱。 (5分)
- (d) 在這篇摘要描述的實驗中，研究者使用了那一種藥物作為此神經傳導物質的antagonist？可以直接寫英文名稱。 (5分)

2. 試申論Long Term Potentiation (LTP) 現象和古典制約學習之間的關係 (20分)

3. 睡眠可分為那幾個階段？這些階段的腦電波圖 (EGG) 各有什麼特色？ (10分)