一、知覺心理學問答題（7 題，共計 50 分）

1. (9 分) Please briefly explain the following concept,
   a. Fovea
   b. Visual acuity
   c. Cortical magnification factor
   d. Tonotopic maps
   e. Change blindness
   f. the Muller-Lyer illusion.
2. (8 分) What is the Weber' s law? And what is the Steve' s Power law? What experiments do you need to establish these two laws respectively?
3. (6 分) What are the optical properties of the eyes in (1) myopia, (2) hyperopia, and (3) astigmatism. How would correct them?
4. (5 分) State, define, and give an example (in words and drawings) for each of five Gestalt principles of perceptual organization.
5. (8 分) Explain what are the "what", "where" and "how" pathways and their respective functional roles in human vision. Describe at least two experiments demonstrating these functional segregations.
6. (8 分) What is the trichromatic theory? And what is the opponent processing theory? Does retinal physiology support the trichromatic theory, opponent-processing theory, or both?
7. (6 分) What are the two binaural auditory localization cues? Why do they occur? How is sound frequency related to these cues?

二、生理心理學問答題（5 題，共計 50 分）

1. (8 分) 神經傳導物質多巴胺(dopamine)主要透過兩個通路: mesostriatal pathway and mesolimbocortical pathway 影響大腦功能。請分別敘述這兩個路徑相關大腦結構及其主要功能為何。
2. (12 分) 睡眠主要牽涉到四個不同的神經系統: 前腦系統(forebrain system)、腦幹系統(brainstem system)、橋腦系統(pontine system)、及下視丘系統(hypothalamic system)。請就這四個系統分別敘述其 (a)主要腦結構、(b)對應之神經傳導物質、及 (c)主要與睡眠相關之功能。
3. (12 分) 思覺失調症(Schizophrenia)患者常見的正向症狀(positive symptoms)、負向症狀(negative symptoms)、及認知症狀(cognitive symptoms)為何? 思覺失調症(Schizophrenia)患者在下列三個系統常見的異常狀況分別為何? (a)腦室異常(ventricular abnormalities)、(b)邊緣系統異常(limbic system abnormalities)、(c)大腦灰白質異常(cortical abnormalities)。
4. (8 分) 何謂動作電位(action potential)? 請描述或以圖示說明形成動作電位的機制，及說明動作電位在傳導上的特性，包括 (a)全有全無律(all-or-none property)、(b)不反應期(refractory period)、及(c)跳躍式傳導(salutatory conduction)。
5. (10 分，每小題 2 分) 名詞解釋題，請簡單扼要敘述該名詞之意涵。
   a. Hebbian theory
   b. Social brain hypothesis
   c. Competitive ligands
   d. Diffusion tensor imaging
   e. Oligodendrocytes

試題隨卷繳回