

碩 士 班	南華大學九十三年學年度 碩士班 招生考試試題卷	
	系所別：自然醫學研究所	科目編號：A2-24-17
	科 目：生理學	試題紙第 <u> </u> / 頁共 <u> </u> /

1. Mr. Wu, a 50-year-old man who weighs 70 kg. On physical examination in laboratory, the following data were obtained: Heart rate (beats/min): 64; Respiratory rate (beats/min): 15; Pulmonary ventilation (L/min): 4.98; Pulmonary arterial oxygen (mL/L blood): 137; Pulmonary venous oxygen (mL/L blood): 189; Oxygen consumption (mL/min): 246. (a) What is Mr. Wu's cardiac output? (b) What is his stroke volume? (c) What is his alveolar ventilation and ventilation-perfusion ratio under normal state? (15%)
2. By means of a diagram, illustrate the relationship between the partial pressure of oxygen in blood and the percent saturation of hemoglobin at rest, and the changes produced in this relationship by exercise. (15%)
3. Diagram the CRH-ACTH-cortisol system. (10%)
4. Describe the forces that determine the magnitude of the glomerular filtration rate (GFR). What is a normal value of GFR? (15%)
5. Describe the formation of pain, and the mechanisms by which pain could be controlled medically or surgically. (15%)
6. Describe isotonic, isometric, and lengthening muscle contractions. (10%)
7. Water crosses epithelial membranes by what pathways? (10%)
8. Name the best four understood gastrointestinal hormones and state their major functions. (10%)