

國立臺灣科技大學  
九十三學年度博士班考試試題

系所組別：工業管理系丙組  
科目：人因工程

總分100分

1. (a) Illustration of the key concepts of signal detection theory (SDT) (10%)。  
(b) Explain how to avoid misjudge a noise as a signal? (5%)  
(c) Provide two examples of the SDT applications. (5%)
2. Single-resources theories of divided attention postulate on undifferentiated source of resources that are shared by all mental process. These theories explain, very nicely, why performance in a time-sharing situation declines as the difficulty of one the tasks increases. There are problems with the single-source theories. Please provide two evidences that single-source theories have difficulty to explain? (15%)。
3. Psychophysics deals with the relationship between human sensations and their physical stimuli. Please explain the theory and procedure of the common used psychophysical tools:
  - (1) Borg scale. (5%)
  - (2) Psychophysical approach for the development of lifting capacity. (10%)
4. Problems of low back disorders (LBD) in industry are topics of interest for many ergonomists. Traditional approaches for realizing the causality of LBD are through disciplines of biomechanics, psychology, psychophysics, psychosocial, physiology, genetics, organizational psychology, and rehabilitation. Please build up a conceptualized model to view LBD problems as a system and to show the potential interactions among factors associated with the various dimensions of occupational low back pain (30%).
5. 美國勞工安全衛生研究所(NIOSH)，於1991提出抬舉工作指引的抬舉公式(lifting equation)為： $RWL = LC \times HM \times VM \times DM \times FM \times AM \times CM$ 。近年來國內因人工物料搬運作業而引起之下背痛問題亦漸受重視，試著由工作設計之角度，利用上述NIOSH公式，說明如何就作業現場潛在造成下背傷害的工作進行改善？(20%)

