

八十七學年度 工業工程 系(所) 工工 丙 組碩士班研究生入學考試

科目 人體工程 科號 3502 共 2 頁第 1 頁 *請在試卷【答案卷】內作答

35. I. Please fill in blanks, each question is 2 points except question 18 which is 1 point only. (答案請寫在答案卷上，勿寫在本試卷上。)
1. O₂ deficit is always greater than O₂ debt : _____ (correct, incorrect)
 2. When we move from resting to strenuous work, our O₂ intake increases significantly, this is attributed to (1) increased cardiac output, (2) redistribution of blood flow and (3) _____.
 3. The basal metabolic rate of a man is approximately 1.0 – 1.25 kcal/min., the maximal aerobic power (MAP) of a man is approximately _____ kcal/min.
 4. For most work standards in the world, the physiological recommended limits is approximately 1/4 – 1/3.: _____ (correct, incorrect).
 5. The wrist can perform flexion / extension and _____ / _____ movements, and the forearm can perform _____ / _____.
 6. Simple reaction time is approximately _____ ms (1.5, 15, 150, 1500), and choice reaction time is linear related to the number of alternatives: _____ (correct, incorrect).
 7. Fitts law is mainly concerned about _____ (choice reaction time, movement time, compatibility of information).
 8. While riding a bicycles and to make a left-turn, the control order of the system is _____ (zero order, first order, second order).
 9. The QWERTY typewriter is intentionally designed to _____ the operator's keystroke rate (increase, decrease).
 10. The principles of hand tool design are : _____, avoid tissue compression, avoid repetitive finger action, design for safe operation, remember women and left
 11. Factors that influence tracking performance are: _____, types of display : pursuit and compensatory, _____, specificity of displayed error in tracking, and paced vs self-paced.
 12. In designing traffic signals the primary coding method is _____ and the second is location coding.
 13. The major part of the feedback of a control is due to the various types of resistance associated with the control, the resistance can be classified into : _____, static friction, viscous damping, and inertia.
 14. The principles in the application of anthropometric data are : design for extreme individual, design for adjustable range, and design for the _____.

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15. _____ is the three-dimensional space within which an individual works,
16. In order to maintain high sensitivity in night vision, the display panel of an aircraft should be designed using _____ light. (blue, green, yellow, red)
17. The color temperature of a tungsten lamp is approximately _____ degrees in Kelvin. (1000, 3000, 6000, 12000).
18. The specification of a color in Munsell color system is H/V/C, and in CIE system is _____. (1 point)

II. 簡答題：

- 6% 1. 請問 Open-plan 之設計有何優缺點？如何從設計中加強其效用？
- 9% 2. 試從減少 glare 之三原則說明降低 VDT 螢幕反光 (reflection) 的方法。
- 8% 3. 比較 Heat Stress 及 Vibration 對工作績效 (performance) 的影響。
- 12% 4. 以大眾運輸系統之設計為例，簡述系統設計各階段之重點，並說明人為失誤之預防應在那些階段考慮。
- 10% 5. 傳統飛機的姿態顯示器有兩種基本設計，請說明其中與人因工程有關的問題為何？後來如何改善？
- 5% 6. 舉一物件顯示器 (Object display) 的實例或自創一個，並指出其中的顯現特徵 (Emergent features) 為何？
- 5% 7. 一般所說的人的 Working memory 最大的容量 (Capacity) 通常為何？提出此容量主張的研究者也提出了擴大此容量的方法，請簡要說明其法。
- 10% 8. 人因工程的研究通常分為描述性研究 (Descriptive studies)、實驗研究 (Experimental research)、與評估研究 (evaluation research)，其中評估研究最難。請對這三種研究各舉一個例子，並說明為什麼評估研究最難。