國立體育學院九十六學年度研究所博士班入學考試試題

運動生物力學(力學與動作診斷組)　　（本試題共 1 頁）

※注意：1 答案一律寫在答案卷上，否則不予計分。
2 請核對試卷、准考證號碼與座位號碼三者是否相符。
3 試卷『彌封處』不得污損、破壞。
4 行動電話或呼叫器等通訊器材不得隨身攜帶，並且關機。

1~6 題，每題 10 分

1. How are EMG frequency and amplitude related to muscle activity? (10 分)
2. Why can a muscle generate more force in an eccentric contraction? (10 分)
3. What is the radius gyration? How does it to apply in inverse dynamics? (10 分)
4. What are differences between Spline smoothing method and Butterworth filter method? What are the conditions to use them respectively? (10 分)
5. What is the difference between "degrees of freedom" and "range of motion" at a joint? (10 分)
   How many DOF does 2D motion can describe at the most?
   How many DOF does 3D motion can describe at the most?
6. Please explain what is the rate of force Development (RFD) and Explosive Strength and Speed Strength Index (SSI)? (10 分)

7~8 題，每題 20 分

7. Please list four types of EMG parameters, and explain with formula and examples .(20 分)
8. What is the center of gravity (COG), center of force(COF), center of pressure (COP), center of plantar foot pressure(CPFP)? How do we measure those parameters? Please explain with the skeet shooting example. (20 分)