平成１６年度博士前期課程入学試験問題解答用紙

機能機械学　専攻		受験番号		
試験科目	英　語	２枚中の１	得点	

Ⅰ.

１．次の英文を読み，書かれている内容について２００字程度の日本語で概要を書きなさい。

Galvani and his research assistants uncovered another unexpected result in their studies of the effects of atmospheric electricity on frog's legs. They had a hunch that lightning, acting in a similar fashion to an electric machine, also would cause contractions of the legs of a frog. Galvani used brass hooks in the spinal cords, and hung the specimens outdoors on an iron railing. When lightning flashed, convulsions occurred as anticipated; but they also occurred when the weather was fair. Galvani was able to intensify the contractions by pressing the brass hooks against the iron railing holding the hook and the frog's legs.

Indoors, he created the contractions without an electric discharge simply by putting a brass hook through the spinal column of a prepared frog, laying the leg on an iron plate, and pressing the brass hook against the iron plate. Indoors, contractions also came when he connected short metal wires between the brass hook in the spinal column and the muscles. Some metals appeared to create more activity than others. When he used insulators, glass or resin, there were no contractions. Somewhat later, Galvani used metallic arcs to touch both the spinal cord and the muscle tissue. The arcs were made with various metals; some were made of all the same metal, and some were made with one metal at one end and another at the other end. He observed that the strength of the contraction depended on the metals used for the arc.

（Joseph F. Keithley; The Story of Electrical and Magnetic Measurements, IEEE Press より修正引用）