Examination Period 3: 2017/18

SPO200518N

Module Title  Biomechanical Basis of Sport & Exercise
Level  Five
Time Allowed  Two Hours

Instructions to students:

- Enter your student number **not** your name on all answer books.
- Answer **two** out of **four** questions.
- All questions are equally weighted.
- Begin each question in a separate booklet; label each booklet clearly with the number of the question you are answering.
- The same material should not constitute a substantial part of more than one question.
- Neither books nor notes may be taken into the examination.
- Students are **not** permitted to remove this examination paper from the examination room. For all purposes the examination paper remains the property of the University of Northampton.

| No. of Pages | 2 |
| No. of Questions | 4 |
Answer two out of four questions.

1. Explain in detail, how the neuromuscular principle of ‘orderly recruitment’ influences force production. Then identify the correct procedures for EMG analysis including the removal of ‘errors’ in the EMG signal.

2. Explain in detail, a ball’s projectile motion using Newton’s linear and angular laws. Then discuss how technique and equipment are manipulated to change this motion in a range of sports.

3. Explain in detail, the force-length characteristics of skeletal muscle. Then discuss why muscle strain injury risk is reduced by lower-limb muscles operating only on the ascending limb of the force-length curve.

4. Explain in detail, the mechanics of the muscle-tendon complex during the stretch shortening cycle (SSC). Then discuss the influence of muscle-tendon stiffness on aerobic performance during SSC exercise.