

## **SIS Biology - Main discipline 2017**

### Part One(1.5h)

Read the article “Genomic sequence, comparative analysis and haplotype structure of the domestic dog” by Lindblad-Toh et al. Nature 2005 (in attach) and answer the following questions. They assess your ability to summarize a research article but also your general understanding of Genetics. Please keep your answers succinct.

1. Outline and justify why sequencing the dog genome has or will be important (1 point)
2. Why are repetitive DNA sequences difficult to assemble and suggest the method(s) by which this problem could be resolved (1 point)
3. Explain how linkage disequilibrium within dog breeds is high but not between dog breeds (1 point)
4. What are the possible causes for variation in the genome size of mammals (2 points)
5. Describe the potential functional consequences of euchromatic and heterochromatic genomic regions (2 points)
6. Define what heritability is and how this concept is used in the article (3 points)