MINISTRY OF EDUCATION, HERITAGE AND ARTS YEAR 13 BIOLOGY REVISION WORKSHEET 5

Write the answers to the following questions in your exercise/activity books.

Genetic Engineering/Population Genetics

1.	a.	Define the term recombinant DNA (rDNA).	(1 mark)
	b.	In 50-70 words, explain how recombinant DNA is formed.	(3 marks)
	c.	Explain the significance of DNA recombinant technology.	(3 marks)
	d.	Explain the economic implications and dangers of rDNA.	(3 marks)
2.	In 100 modifi a.	words, describe the benefits and drawbacks of genetically ed organisms. State the Hardy Weinberg (HW) Principle.	(8 marks) (1 mark)
	b.	Explain why the HW Principle is not satisfied in natural populations.	(2 marks)

Solve the following Hardy Weinberg problems. (2 marks each)

- 4. In a population that is in Hardy-Weinberg equilibrium, the frequency of the recessive homozygote genotype of a certain trait is 0.09. Calculate the percentage of individuals homozygous for the dominant allele.
- 5. In a population that is in Hardy-Weinberg equilibrium, 38 % of the individuals are recessive homozygotes for a certain trait. In a population of 14,500, calculate the percentage of homozygous dominant individuals and heterozygous individuals.
- 6. Allele T, for the ability to taste a particular chemical, is dominant over allele t, for the inability to taste the chemical. Four hundred university students were surveyed and 64 were found to be non-tasters. Calculate the percentage of heterozygous students. Assume that the population is in H-W equilibrium.
- 7. An allele W, for white wool, is dominant over allele w, for black wool. In a sample of 900 sheep, 891 are white and 9 are black. Calculate the allelic frequencies within this population, assuming that the population is in H-W equilibrium.