

Name _____

Student Number _____

STA256H5F Quiz 1A

1. (1 marks) An experiment consists of flipping a coin and rolling a die. List the sample space of the experiment

$S = \{ H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6 \}$

2. (3 marks) Denote E_1 as the event that the coin landed as heads and a number greater than 3 is rolled on the die. State E_1 and find $P(\bar{E}_1)$. Also, list all the sample points in E_1

$E_1 = \{ H4, H5, H6 \}, P(\bar{E}_1) = 3/4$

3. (2 marks) *True or False* Given events $A, B \subseteq \Omega$, with $P(A), P(B) \geq 0$, $P(A \cup B) = P(A \cap B) \Rightarrow A=B$

True

4. (4 marks) De Morgan thinks he came up with a new law. He thinks that, given events $A, B \subseteq \Omega$ $A \cup (A \cap B) = \Omega$. He can't prove it himself, can you prove it for him?

$$A \cup (A \cap B) = A \cup (\bar{A} \cup \bar{B}) = (A \cup \bar{A}) \cup (A \cup \bar{B}) = \Omega$$