Indian Institute of Space Science and Technology
AVD613 - Assignment 1
Department of Avionics

Assignment 1

Question 1: For a random experiment the sample space $\Omega = \{1, 2, 3, 4, 5, 6\}$. Find out the smallest σ-field containing the events $\{1\}$ and $\{2\}$.
Question 2: Suppose the marks scored by a student in an exam of maximum marks 10 is random. What is an appropriate sample space Ω and a σ-field for modelling the scored marks as a random experiment?
Question 3 (From Bruce Hajek's book): A register contains 8 random binary digits. Describe an appropriate sample space Ω and a σ-field for modelling the sequence of 8 random binary digits. Express the following events explicitly as subsets of Ω

1. E_1: no two neighbouring digits are the same
2. E_2: some cyclic shift of the register contents is equal to 01100110
3. E_3: the register contains exactly four zeros
4. E_4: there is a run of at least six consecutive ones