During January the probability that Angela's car fails to start in the morning is 0.2 and this is unaffected by whether or not it started the previous day. When it fails to start, she walks to work. (i)What is the probability that Thursday is the first day of the week (starting on Monday) that she has to walk?(ii)What is the probability that she drives to work every day from Monday to Friday?(iii)What is the probability that she drives to work for exactly 3 days in a week?(iv)What is the probability that she has to walk exactly two days in a row in one week?

(I)   It is the composition of four independent events: successful start on Monday, Tuesday, Wednesday and fail on Thursday. So $p = (1 - 0.2)(1 - 0.2)(1 - 0.2) * 0.2 = 0.1024$

(II)   It is the composition of five independent events: successful start five days in a row. So $p = (1 - 0.2)(1 - 0.2)(1 - 0.2)(1 - 0.2)(1 - 0.2) = 0.32768$

(III) It is binomial distribution - three successful starts with seven attempts. So
$$p = C_3^7 * 0.2^3 * (1 - 0.2)^4 = 0.11469$$

(IV)   It is six possible events with the probability $p = 0.2^2 * 0.8^5$.The aggregate probability is $P = 6p = 0.07864$