Format:

- You will have to answer 8 out of 12 questions.
- Many require using a *combination* of concepts / formulas from several chapters.
- Some (usually just one part of a question) cannot be done without Maple - I clearly indicate that.
- Most resemble assignment questions, but one or two may ask for something unusual (yet relatively simple).
- They are presented in random order (not from Chapter 1 to 7, neither from easy to hard - this goes for parts of a question as well, e.g. part d) may be a lot easier than Part b).

General advice:

- Read *all* questions first; don't do any work yet, just quickly designate each of them as one of three types: (i) I know how to do this, (ii) I may be able to manage, (iii) I don't have a clue.
- Then start working on these, from the easiest to the hardest. The same applies to *parts* of a question - start with the easiest, and don't insist on answering all parts if one of them is too hard (answering a) and c) and skipping b) gets you 2/3 of the full credit, which may be all you need to reach a B grade).
- At first, leave the answers (whenever possible) un-evaluated, i.e. in the

$$\sum_{i=12}^{23} \binom{23}{i} \left(\frac{1}{6}\right)^i \left(\frac{5}{6}\right)^{23-i}$$

  form; do the computation only in the end.
- Make sure that you can pick up as much of a *partial mark* as possible, even when the final answer is incorrect (which may always happen). For example, when you recognize that X has, say, the binomial distribution with $n = 23$ and $p = \frac{1}{6}$, *tell me that,* and spell out briefly what steps you are taking to get the final answer.

Most important formulas / concepts / questions to review:

- Computing probabilities (of Boolean expressions in particular).
- Probability-tree approach and conditional probabilities.
- Conditional *distribution* of a RV, both discrete and continuous (total probability must be 1, wrong 'normalization' is still a common mistake)!

- Treatment of a *linear combination* of random variables (mean, variance, covariance, etc.).
- Know your 'common' distributions; be able to tell that a random variable is, say, binomial (roll-of-a-die type of experiment), or hypergeometric (dealing cards, drawing marbles). These two are of special importance since they each have a multivariate version (and the corresponding covariance formulas).
- Understand the 'conditional' and 'marginal' ranges of integration.
- Central Limit Theorem.