

# Grading scheme

October 19, 2010

1.
  - a. Correct PDF - 1point. Correct CDF - 1point.
  - b.  $34/64$  - 1point.
2.
  - a. Correct mean= $1.5$  - 1point. 0% of the time expect to see the sum of 3 coin flips take on its mean value - 1 point.
  - b. Var= $0.75$ . 1 point.
3.
  - d - 1 point.
4. State that  $s^2$  is **unbiased** estimator of  $\sigma^2$ , or writing  $E(s^2) = \sigma^2$  - 1point. Provind correctly  $E(s^2) = \sigma^2$  by showing all steps - 1point. Providing a sloppy or a weak proof of  $E(s^2) = \sigma^2$  - 0.5 point.
5.
  - a.  $E(Y|x) = 0$  - 1point.
  - b.  $COV(X, Y) = 0$  - 1 point. Correct proof that  $X$  and  $Y$  are NOT independent - 1 point.
  - c.  $P(X = 1) = 0.40$  - 1 point.
  - d. 0. This can be shown mathematically or correctly arguing intuitively - 2 points.
6. Show all steps proving the fact that  $E(\bar{x}) = \mu$  - 1 point. Assumption: iid - 1 point.
7. Test  $\frac{Z-2}{1/n^{1/2}}$  1 point. Stating that this test statistic is distributed  $N(0, 1)$  - 1point.
8.
  - a. 60000 - 1point.
  - b.  $\frac{4}{2} = 2$  - 1point. Writing correct the hypothesis 0.5point. Explaining correctly how to use the tables in the back of textbook - 0.5 point.
9.
  - a. 4 - 1 point.
  - b.  $\chi_2^2$  - 1 point. If stating that  $Y$  has  $\chi^2$  distribution- 0.5 point.
10.

$E(Y) = 9$ ,  $Var(Y) = 8$  1 point;  $Y$  is distributed  $N(9, 8)$  1 point. Stating that  $Y$  has normal distribution with incorrect mean and variance 0.5 point.

**NOTE: the only reason you can request for regrading is if this scheme had not been applied to your exam. Exams written in pencil**

cannot be regraded as per university policy. If you decide to request regrading write explicitly the reason and indicate the question to remark.