Name:

|  |  |  |
| --- | --- | --- |
| Problem | Points | Score |
| 1(a) | 10 |  |
| 1(b) | 15 |  |
| 2 | 25 |  |
| 3(a) | 5 |  |
| 3(b) | 10 |  |
| 3(c) | 10 |  |
| 4(a) | 5 |  |
| 4(b) | 10 |  |
| 4(c) | 10 |  |
| Total | 100 |  |

Notes:

1. The exam is closed books and notes except for one double-sided sheet of notes.
2. Please indicate clearly your answer to the problem.
3. If I can’t read or follow your solution, it is wrong and no partial credit will be awarded.

**Problem No. 1**: Two random variables *X* and *Y* have the joint PDF given by



Determine the following:

(10) (a) the value of the constant *k* that makes  a true joint PDF

(15) (b) the marginal PDF for X

**(25) Problem No. 2**: The random variable *X* is uniformly distributed between 1 and 2. If *S* is the sum of 40 independent experimental values of *X*, evaluate 

**Problem No. 3**: If the z-transform of the PMF of the random variable *N* is given by



determine

(5) (a) the PMF of *N*

(10) (b) 

(10) (c) 

**Problem No. 4**: The scores in a class quiz are as follows: 0, 1, 2.

(5) (a) What is the mean of the data? What is the variance?

(10) (b) What is the skewness of the data?

(10) (c) What is the kurtosis of the data?