

92 年中央大學通訊系在職專班 工程數學考題

1. Please explain the following terminologies (50%).

- (a) probability distribution
- (b) random variable
- (c) expected value and variance
- (d) conditional probability
- (e) central limit theorem

2. Suppose that we have a fuse box containing 20 fuses, of which 5 are defective. If 2 fuses are selected at random and removed from the box in succession without replacing the first, what is the probability that both fuses are defective?(10%)

3. A coin is biased so that a head is twice as likely to occur as a tail. If the coin is tossed 3 times, what is the probability of getting 2 tails and 1 head?(15%)

4. What is the probability of getting a total of 7 or 11 when a pair of dice are tossed?(10%)

5. The following is the probability distribution of a random variable X.

x	0	1	2	3
f(x)	0.51	0.38	0.1	0.01

Calculate its mean (expected value) and variance (15%).