View Report

R1

(Number of First Attempts: 91)

MCQ

Question 1

What is the generalized methodology for finding the mean of a random variable given its probability density function?

Integrate f(x) with respect to x across its entire domain	5	(5.49 %)	
Integrate (x-u)f(x) with respect to x across its entire domain, where u is E(x)	0	(0 %)	
➡ Integrate xf(x) with respect to x across its entire domain	86	(94.51 %)	Average Grade: 0.95 / 1 (94.51 %)
Integrate f(x) with respect to x from its lower bound to a, where a is the variable we wish to evaluate the cumulative distribution function at	0	(0 %)	

Question 2

What is the statistical distribution of a random variable Z = X/Y, where X is normally distributed and Y is chi-sq distributed?

Normal distribution	0	(0 %)	
➡ t distribution	80	(87.91 %)	Average Grade: 0.88 / 1 (87.91 %)
F distribution	10	(10.99 %)	
Chi-sq distribution	1	(1.1 %)	

Question 3

Why do we need to study various statistical distributions apart from normal?

All random variables are normally distributed regardless of distribution		0	(0 %)
A portfolio (linear combination) of normally distributed random variables may take on various non-normal distributions		6	(6.59 %)
All of the options are false		10	(10.99 %)
➡ In finance, we may encounter various combinations of normally distributed random variables (e.g. log, multiplicative or quotient), and these combinations have different statistical distributions that we may need to perform hypothesis testing or confidence interval analysis on		75	(82.42 %)

Average Grade: 0.82 / 1 (82.42 %)

Question 4

Poisson distribution is:

➡ A limiting form of the binomial distribution as the number of trials tends to infinity		84	(92.31 %)
A continuous distribution that tends to the normal distribution as the number of trials tend to infinity		4	(4.4 %)
A limiting form of the bernoulli distribution		3	(3.3 %)

Average Grade: 0.92 / 1 (92.31 %)

Used to model log returns	0	(0 %)	

Question 5

Which of the following is true of returns?

We can model simple returns with the normal distribution and log returns with the log normal distribution	29	(31.87 %)	
➡ We can model simple returns with the log normal distribution and log returns with the normal distribution	55	(60.44 %)	Average Grade: 0.6 / 1 (60.44 %)
We can model both simple and log returns with the normal distribution	6	(6.59 %)	
We can model both simple and log returns with the log normal distribution	1	(1.1 %)	

Question 6

I am thinking of a statistical distribution. Variance of the distribution is always twice of the mean. Which statistical distribution is this?

Normal	0	(0 %)	
Poisson	8	(8.79 %)	Average Grade: 0.91 / 1 (91.21 %)
➡ Chi-sq	83	(91.21 %)	
F-distribution	0	(0 %)	

Question 7

Comparing the t-distribution to the normal distribution:

Normal distribution has fatter tails	2	(2.2 %)	Average Grade: 0.97 / 1 (96.7 %)

Normal distribution is not skewed while the t-distribution is		0	(0 %)
Normal distribution is symmetrical while t-distribution is not		1	(1.1 %)
➡ t-distribution has fatter tails		88	(96.7 %)

Question 8

Which of the following is an application of the F-distribution?

➡ Comparing the residual sum of squares (RSS) of two models, where one is a superset of another		82	(90.11 %)
Testing hypotheses related to the variance of a distribution		6	(6.59 %)
Test hypotheses related to the mean of a distribution		1	(1.1 %)
Testing for significance of model coefficient estimates (which are formally 'sample mean' estimates)		2	(2.2 %)

Average Grade: 0.9 / 1 (90.11 %)

Question 9

Which of the following is an application of the chi-sq distribution?

Testing hypotheses on sample means		1	(1.1 %)
➡ Testing hypotheses on sample variances		86	(94.51 %)
Testing hypotheses on linear combinations of normal variables		3	(3.3 %)
Testing hypotheses on log returns		1	(1.1 %)

Average Grade: 0.95 / 1 (94.51 %)

Question 10

We form a portfolio with a number of instruments, N. Assume that all of the instruments are normally distributed. Considering the portfolio returns:

	It will also be normally distributed, and follow a standard normal distribution	9	(9.89 %)
➡	It will be normally distributed, but does not have to follow a standard normal distribution	79	(86.81 %)
	It will be chi-square distributed	1	(1.1 %)
	It will be t-distributed	2	(2.2 %)

Average Grade: 0.87 / 1 (86.81 %)

Question 11

How many parameters does the F-distribution have, and are they interchangeable?

	2 parameters. Both are degree of freedom parameters, and are interchangeable	1	(1.1 %)
	1 parameter	0	(0 %)
➡	2 parameters. Both are degree of freedom parameters, and the order matters	89	(97.8 %)
	2 parameters. One is a degree of freedom parameter while the other is not.	1	(1.1 %)

Average Grade: 0.98 / 1 (97.8 %)

Question 12

Referring to the class preparation materials, what is the mean of a chi-sq random variable with k degrees of freedom?

➡	k	89	(97.8 %)	
	2k	1	(1.1 %)	Average Grade: 0.98 / 1 (97.8 %)
	kN where N is the number of trials	0	(0 %)	
	k/2	1	(1.1 %)	

Question 13

To determine the variance of a discrete distribution given it's probability density function (or probability mass function, for discrete):

➡	We can simplify the process by using summation instead of integration	83	(91.21 %)	
	We evaluate sum to infinity of the pdf across all values of the random variable	2	(2.2 %)	Average Grade: 0.91 / 1 (91.21 %)
	We take the midpoint of the lower and upper bounds given	0	(0 %)	
	None of the above	6	(6.59 %)	

Question 14

What is the mean of a uniform distribution with lower bound a and upper bound b?

	(b-a)/2	10	(10.99 %)	
	a/2	0	(0 %)	Average Grade: 0.89 / 1 (89.01 %)
	b/2	0	(0 %)	
➡	(a+b)/2	81	(89.01 %)	

Question 15

What is the distribution of Z = X/Y where X is chi-squared distributed and so is Y, but X and Y are independent?

	t-distribution	1	(1.1 %)	Average Grade: 0.97 / 1 (96.7 %)

chi-square distribution		2	(2.2 %)
F-distribution		88	(96.7 %)
normal distribution		0	(0 %)