SVKM's NMIMS

School of Mathematics, Applied Statistics & Analytics

M.Sc. (Statistics and Data Science)

Syllabus of Entrance Test

Topics learnt in B.Sc. Statistics course

1. Descriptive Statistics
2. Probability
3. Univariate Discrete and Continuous distributions, Sampling distributions, Bivariate distributions
4. Sampling Theory
5. Design of Experiments
6. Statistical Inference – Estimation Theory, Testing of Hypotheses
7. Correlation and Regression Analysis
8. Time Series, Index numbers
9. Statistical Quality Control
10. Operations Research – Linear programming problem, PERT & CPM, Decision Theory

Sample Questions:

1. The relation between the mean and variance of χ^2 with n d.f. is:
   (a) mean = 2 variance (b) 2 mean = variance
   (c) mean= variance (d) None of the above
2. If (X,Y)~BVN(0,0,1,1,ρ), the correlation coefficient between X^2 and Y^2 is equal to
   (a) ρ (b) ρ^2
   (c) 1 (d) None of the above
3. Simple random sample can be drawn with the help of
   (a) random number table (b) chit method
   (c) roulette wheel (d) all of the above
4. A negative relationship between anxiety before a test and the performance therein indicates that
   (a) more the anxiety the better is the performance.
   (b) people with little anxiety tend to get high score.
   (c) little anxiety less score.
   (d) none of the above.
5. The probability that a teacher will give an announced test during any class meeting is 1/5. If a student is absent twice then the probability that he will miss at least one test is
   (a) 7/25 (b) 9/25
   (c) 16/25 (d) 24/25
6. Suppose $X_1, X_2, \ldots X_n$ are i. i. d. with density function $f(x) = \frac{\theta}{x^2}$, $\theta < x$, $\theta > 0$. Then
   (a) $\sum \frac{1}{x_i^2}$ is sufficient for θ. (b) $\prod \frac{1}{x_i^2}$ is sufficient for θ.

(c) $\min_i x_i$ is sufficient for θ. (d) $(\min_i x_i , \max_i x_i)$ is sufficient for θ.

7. Consider a test with α = 5% and β = 0.25. if the size of the test is reduced to 1% then power of the test will be
   (a) less than 0.25 (b) greater than 0.75
   (c) less than 0.75 (d) cannot say
8. A Latin Square design possesses –
   (a) one way classification (b) two way classification
   (c) three way classification (d) no classification
9. Which of the following is not a major requirement of a linear programming problem?
   (a) there must be alternative courses of action among which to decide.
   (b) an objective for the firm must exist.
   (c) the problem must be of maximization type.
   (d) resources must be limited.
10. Non-parametric Tests:
   (a) are used only when your data do not meet the assumptions of parametric statistics.
   (b) are used if your data do not meet the assumptions of a parametric test, even if your data are on an interval or ratio scale.
   (c) are used when your data are scaled on less than an interval scale.
   (d) Both (b) and (c).