



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

INFORMATION TECHNOLOGY DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	PROBABILITY AND STATISTICS
Course Code	:	AHSB12
Program	:	B.Tech
Semester	:	II
Branch	:	CSE,CIVIL &IT
Academic Year	:	2019- 2020
Course Faculty	:	Dr. M Anita, Professor Dr. J Suresh Goud, Associate Professor Ms. V Subba Laxmi, Assistant Professor Mr. Ch Chaitanya, Assistant Professor

COURSE OBJECTIVES:

The course should enable the students to:	
I	Enrich the knowledge of probability on single random variables and probability distributions.
II	Apply the concept of correlation and regression to find covariance.
III	Determine mean and variance of given data by sampling distribution.
IV	Analyze the given data for appropriate test of hypothesis.

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
MODULE-I						
1	State the probability distribution.	If X is a random variable then P(X=x) is called probability distribution or probability function	Understand	CO 1	CLO 3	AHSB12.03
2	Describe the predictable experiment?	If the result of the experiment is unique then it is called predictable experiment	Remember	CO 1	CLO 1	AHSB12.01
3	Describe the Non Predictable experiment?	If the result of the experiment is not unique then it is called non predictable experiment	Remember	CO 1	CLO 1	AHSB12.01
4	Describe the outcome of the Experiment?	Each possible Result of the experiment is called an outcome	Remember	CO 1	CLO 1	AHSB12.01
5	Describe the sample space?	The collection of all possible outcomes in any random experiment is called sample space.	Remember	CO 1	CLO 1	AHSB12.01

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6	Narrate the continuous random variable?	A random variable is said to be continuous if the range of the random variable is interval of two real numbers.	Remember	CO 1	CLO 3	AHSB12.03
7	State the exhaustive event?	The total number of events in any random experiment are called exhaustive events.	Remember	CO 1	CLO 1	AHSB12.01
8	Express the definition of mutually exclusive event?	It two or more events cannot occur simultaneously in the random experiment, then the events are called mutually exclusive events.	Remember	CO 1	CLO 1	AHSB12.01
9	Describe equally likely event?	Two events are said to be equally likely events if they have equal chance of happening.	Remember	CO 1	CLO 1	AHSB12.01
10	Describe independent event.	If one event is not affected by the another event then the two events are called independent events.	Remember	CO 1	CLO 1	AHSB12.01
11	State discrete random variable?	A random variable is said to be discrete if the range of the random variable is finite.	Remember	CO 1	CLO 3	AHSB12.03
12	Describe the favorable event?	The events which are favorable to one particular event in a random experiment.	Remember	CO 1	CLO 1	AHSB12.01
13	State the definition of Probability.	Consider any random experiment the total number of events are n , out of them m events are favorable to a particular event E then $P(E) = \frac{\text{Favorable events}}{\text{total number of events}}$.	Understand	CO 1	CLO 1	AHSB12.01
14	Analyze conditional event?	Two events are said to be conditional events if they happen simultaneously. If A and B are any two events happening simultaneously then A/B , B/A are called conditional events.	Remember	CO 1	CLO 2	AHSB12.02
15	State the Definition of random variable.	In any random experiment the sample space associated with a real number is called random variable.	Remember	CO 1	CLO 3	AHSB12.03
MODULE-II						
1	Express the formula of variance of the binomial distribution.	The variance of the binomial distribution is npq .	Remember	CO 2	CLO 5	AHSB12.05
2	Describe the binomial distribution	Consider a random experiment having n trials. Let it succeed x times then the probability of getting x success is p^x , and the probability of $n-x$ failures are q^{n-x} . Therefore the probability of getting x success out of n trials	Remember	CO 2	CLO 5	AHSB12.05

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		are $b(x,n,p) = P(X=x) = n C_x p^x q^{n-x}$, $x=0,1,2,\dots,n$				
3	Describe the Poisson distribution	A random variable X is said to follow a Poisson distribution if it assumes only non-negative values and its probability mass function is given by $f(x, \lambda) = P(X = x) = \frac{e^{-\lambda} \cdot \lambda^x}{x!}$ $, x = 0,1,\dots,\infty$	Understand	CO 2	CLO 7	AHSB12.07
4	Describe the Normal distribution	If X is a continuous random variable μ, σ^2 are any two parameters then the normal distribution is denoted by $N(\mu, \sigma^2) = P(X_1 \leq X \leq X_2) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$	Understand	CO 2	CLO 9	AHSB12.09
5	Describe the properties of Normal curve	Normal curve is bell shape. It is symmetric about $x = \mu$ and $z = 0$. The total area in a normal distribution is unity.	Understand	CO 2	CLO 9	AHSB12.09
6	State the Bernoulli trials.	It is a random experiment having only two possible outcomes. Which are denoted by success and failure.	Remember	CO 2	CLO 5	AHSB12.05
7	State the mean of the binomial distribution.	The mean of the binomial distribution is np .	Remember	CO 2	CLO 5	AHSB12.05
8	State the variance of the Poisson distribution	The variance of the Poisson distribution is np .	Remember	CO 2	CLO 7	AHSB12.07
9	State the mode of the binomial distribution	The mode of the binomial distribution is $(n+1)p$	Remember	CO 2	CLO 5	AHSB12.05
10	State the mean of the Poisson distribution	The mean of the Poisson distribution is np .	Remember	CO 2	CLO 7	AHSB12.07
11	State the median of the normal distribution.	The median of the normal distribution is μ .	Remember	CO 2	CLO 9	AHSB12.09
12	State the mode of the Poisson distribution	The mode of the Poisson distribution is np .	Remember	CO 2	CLO 7	AHSB12.07
13	state the mean of the normal distribution.	The mean of the normal distribution is μ .	Remember	CO 2	CLO 9	AHSB12.09
14	State the variance of the normal distribution.	The variance of the normal distribution is σ^2 .	Remember	CO 2	CLO 9	AHSB12.09

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15	State the mode of the normal distribution.	The mode of the normal distribution is μ .	Remember	CO 2	CLO 9	AHSB12.09
MODULE-III						
1	Describe the Karle Pearson's Coefficient of correlation?	It is a method to find strength of the relationship between two variables. It is denoted by r .	Understand	CO 3	CLO 13	AHSB12.013
2	State the simple correlation?	If The relationship is confined between only two variables then it is known as simple correlation.	Remember	CO 3	CLO 13	AHSB12.013
3	Explain Repeated Ranks of Rank correlation.	If there are more items with same value then common ranks are given to repeated items. this common rank is the average of ranks which items would have assumed.	Understand	CO 3	CLO 13	AHSB12.013
4	Explain the Correlation?	The degree of the relation between the variables is known as correlation.	Remember	CO 3	CLO 13	AHSB12.013
5	Narrate the properties for correlation?	The correlation coefficient lies between -1 and 1.	Remember	CO 3	CLO 13	AHSB12.013
6	Describe the Rank correlation?	It is also used to find strength of the relation between two variables by ranks. It is denoted by ρ .	Understand	CO 3	CLO 13	AHSB12.013
7	Narrate the properties for rank correlation?	The rank correlation coefficient lies between -1 and 1	Remember	CO 3	CLO 13	AHSB12.013
MODULE-IV						
8	Classify the lines of regression of X on Y?	The lines of regression of X on Y is $(x - \bar{x}) = b_{xy} (y - \bar{y})$	Remember	CO 3	CLO 15	AHSB12.015
9	State the form of regression line of X on Y?	Regression line of X on Y is $X = a + b Y$.	Remember	CO 3	CLO 15	AHSB12.015
10	Classify lines of regression of Y on X?	The lines of regression of Y on X is $(y - \bar{y}) = b_{yx} (x - \bar{x})$	Remember	CO 3	CLO 15	AHSB12.015
11	Narrate the multiple coefficients of correlation.	Multiple correlation coefficients are non-negative. Their value lies between 0 and 1.	Remember	CO 3	CLO 11	AHSB12.011
12	State the multiple regression coefficients.	Instead of one independent variable, two or more independent variables are used to estimate the values of dependent variable then it is called multiple correlation	Remember	CO 3	CLO 11	AHSB12.011
13	Explain the multiple correlations?	The relationship between more than two variables is known as multiple correlation	Remember	CO 3	CLO 11	AHSB12.011

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14	State the formula regression line of Y on X?	Regression line of Y on X is $Y=a +b X$	Remember	CO 3	CLO 15	AHSB12.015
15	State the definition of the regression line?	Regression line is a straight line which gives the relation between two variables.	Remember	CO 3	CLO 15	AHSB12.015
MODULE-IV						
1	State the definition of population?	The collection of objects is known as population.	Remember	CO 4	CLO 16	AHSB12.016
2	Explain the finite population	If the collection of objects are finite then it is called finite population	Remember	CO 4	CLO 16	AHSB12.016
3	Explain the infinite population?	If the collection of objects are infinite then it is called infinite population	Remember	CO 4	CLO 16	AHSB12.016
4	Describe the sample?	Any subset of the population is called a sample.	Remember	CO 4	CLO 16	AHSB12.016
5	Describe the small sample.	If the sample size is less than 30 then it is called as small sample.	Remember	CO 4	CLO 16	AHSB12.016
6	Narrate the sampling?	The process of choosing samples from the population.	Remember	CO 4	CLO 16	AHSB12.016
7	Describe the large Sample?	If the sample size is greater than or equal to 30.	Remember	CO 4	CLO 16	AHSB12.016
8	Define the sampling distribution?	The set all possible samples is called sampling distribution.	Remember	CO 4	CLO 16	AHSB12.016
9	State the meaning of the level of significance?	The level of significance is defined as the probability of rejecting a null hypothesis by the test when it is really true, which is denoted by α .	Remember	CO 4	CLO 16	AHSB12.016
10	Analyze the hypothesis?	The statement about the population parameter is called hypothesis.	Remember	CO 4	CLO 17	AHSB12.017
11	Express the testing of hypothesis?	The decision making procedure to accept or reject a hypothesis.	Remember	CO 4	CLO 17	AHSB12.017
12	State the null hypothesis?	It is the hypothesis which is tested for possible rejection under the assumption that it is true	Remember	CO 4	CLO 17	AHSB12.017
13	State the alternative hypothesis?	It is the hypothesis differ from the given null hypothesis	Remember	CO 4	CLO 17	AHSB12.017
14	Interpret the type-I error?	It is the percentage of error which is occurred by Rejecting the null hypothesis when it is true	Remember	CO 4	CLO 17	AHSB12.017
15	Describe the one sided test	If you are using a significance level of .05, a one-tailed test allots all of your alpha to testing the statistical significance in the one direction of interest.	Remember	CO 4	CLO 17	AHSB12.017

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MODULE-V						
1	Classify the small Sample?	If the sample size is less than 30 then it is called as small sample.	Remember	CO 5	CLO 21	AHSB12.021
2	Express the formula of degree of freedom for Student's t-distribution for single mean?	The degree of freedom for Student's t-distribution for single mean is $n-1$	Remember	CO 5	CLO 21	AHSB12.021
3	Describe the degrees of freedom?	The number of degrees of freedom is the number of values in the final calculation of a statistic that are free to vary.	Remember	CO 5	CLO 21	AHSB12.021
4	Narrate about the conclusion in testing of hypothesis	If the Calculated value \leq the Tabulated value then accept null hypothesis. If the Calculated value $>$ the Tabulated value then accept null hypothesis	Remember	CO 5	CLO 23	AHSB12.023
5	Analyze the student t-distribution for single mean?	Consider a small sample of size n with mean \bar{x} and variance S^2 is taken from the population having mean μ and variance σ^2 .	Understand	CO 5	CLO 21	AHSB12.021
6	Analyze the student t-distribution for difference of means?	Consider a population with mean μ and variance σ^2 . If we choose two small samples from the population of size n_1 and n_2 with the mean \bar{x}_1 and \bar{x}_2 , variances S_1^2 and S_2^2	Understand	CO 5	CLO 21	AHSB12.021
7	Illustrate F-distribution?	To test whether there is any significance difference between two sample variances S_1^2 and S_2^2	Understand	CO 5	CLO 22	AHSB12.022
8	Illustrate the Chi-square distribution?	To test whether there is any significance difference between observed and expected frequencies	Understand	CO 5	CLO 23	AHSB12.023
9	Describe the Chi-square distribution for goodness of fit?	Whether there is significance difference between observed and expected frequencies to use Chi-square test	Understand	CO 5	CLO 23	AHSB12.023
10	Describe the Chi-square test for independence of attributes?	We test if two attributes under consideration is independent or not.	Understand	CO 5	CLO 23	AHSB12.023
11	State the degree of freedom for Student's t-distribution for difference of means?	The degree of freedom for Student's t-distribution for difference of means is $n_1 + n_2 - 2$	Remember	CO 5	CLO 21	AHSB12.021

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12	State the formula of degree of freedom for Student's F-distribution?	The degree of freedom for Student's F-distribution is $(n_1 - 1, n_2 - 1)$	Remember	CO 5	CLO 22	AHSB12.022
13	State the formula of degree of freedom for Chi-square distribution?	The degree of freedom for Chi-square distribution is n-1	Remember	CO 5	CLO 23	AHSB12.023
14	Narrate the significance for small samples	The study of test of significance is the deviation between the observed sample statistic and the hypothetical parameter value is significant and the deviations between two sample statistics are significant.	Remember	CO 5	CLO 21	AHSB12.021
15	State the formula of degree of freedom for Chi-square distribution of Attributes?	The degree of freedom for Chi-square distribution of Attributes is $(row - 1, column - 1)$	Remember	CO 5	CLO 23	AHSB12.023

Signature of the Faculty

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