KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

MBA 3rd Sem. Examination, 2014

Paper : 09

Statistics for Management

Time : 3 Hrs. Full Marks : 80

1. Answer any five from the following questions (each within 50 words) $2\times5 = 10$
   (a) What is a mutually exclusive event?
   (b) The purchase of some shares can give a profit of Rs. 400 with Probability $\frac{1}{100}$ and Rs. 300 with probability $\frac{1}{20}$. Comment on a fair price of the share.
   (c) Under what conditions are the t-test used?
   (d) Define co-efficient of correlation?
   (e) What are the two methods adopted in smoothing techniques?
   (f) What are the various parameters of binomial distribution?
   (g) Find the probability of throwing 8 with two dice.
2. Answer any three from the following questions (each within 100 words) $4\times3 = 12$
   (a) How would you use a poisson distribution to find approximately the probability of exactly 5 successes in 100 trial the probability of success in each trials being $p = 0.1$?
   (b) Explain the axiomatic approach to probability.
   (c) What is a chi-square test?
   (d) Define Karl Pearson's co-efficient of correlation. What is it intended to measure?
   (e) What is a 'Time Series'? What are the components of a time series?
3. Answer any three from the following questions (each within 250 words) $6\times3 = 18$
   (a) In a normal distribution, 31 percent items are below 45 and 8

percent are above 64. Find the $\bar{x}$ and σ of this distribution.

(b) In case of small samples, describe the procedure for testing the significance of an observe sample mean. Also describe how two sample means are tested for their equality in case of large samples.

(c) Explain briefly the probability distribution and its types.

(d) Distinguish clearly between 'correlation' and 'regression' analysis.

(e) Differentiate between Cyclical functions and seasonal variation. How will you measure the Cyclical veriation?

4. Answer any four from the following questions $10 \times 4 = 40$
(each within 400 words)

(a) What is the addition and multiplication rule on probability? When is the rule of multiplication applied?

An urn contains 12 white balls and 8 red balls. Two balls are to be selected in succession at random and without replacement. What is the probability that,

(i) Both balls are white

(ii) The first ball is white and the second ball is red

(iii) One white ball and one red ball are selected

(b) (i) What is a random variable? Define mean and variance of random veriable. 3

(ii) Calculate the mean, variance and standard deviation of random variables sales from the following information provided by a sales manager of a certain business unit for a new product: 7

Monthly sales (in unit)	Probability
50	0.10
100	0.30
150	0.30
200	0.15
250	0.10
300	0.05

(c) (i) Two groups of sizes 121 and 81 are subjected to tests. Their means are found to be 84 and 81 and standard deviations 10 and 12. Test for the significance of difference between two groups. 5

(ii) A firm produces tubes of diameter 2 cm. A sample of 10 tubes is found to have a diameter of 2.01 cm and variance 0.004. Is the difference significant? 5

$[t_{0.05,9} = 2.26]$.

(d) The following is the given data : 10

Variance of $x = \sigma$

Regression equations :

$4x - 5y + 33 = 0$

$20x - 9y - 107 = 0$

Find : (i) Mean values of x and y

(ii) Co-efficient of correlation between x and y

(iii) Standard deviation of y

(e) The following is the data for energy consumption (measured in quadrillions of BTU) in the united states from 1981 - 1986 as reported in the statistical Abstracts of the united states.

Year	Time Period(+)	Annual Energy consumption(y)
1981	1	74.0
1982	2	70.8
1983	3	70.5
1984	4	74.1
1985	5	74.0
1986	6	73.9

Find the trend and calculate the percentage of trend for each year (cyclic variation)

(f) (i) What are the important characteristics of Chi-square (X^2) Test? 5

(ii) Find the value of X^2 for the following information : 5

Class observed	:	A	B	C	D	E
Frequency	:	8	29	44	15	4
Expected frequency	:	7	24	38	24	7