

B.C.A.(SEMESTER –IV) EXAMINATION—APRIL 2015
DATA ANALYSIS AND STATISTICAL TECHNIQUES

Duration: 2 hours

Marks: 50

INSTRUCTIONS:

1. All questions are compulsory.
2. Use of non-programmable calculators is allowed.

Q1. A Fill in the blanks selecting the appropriate words given below each statemnts. (5)

- a. The set of all units under statistical investigation is _____
(sample, population field)
- b. The qualitative characteristics of an individuals are _____.
(variable, attribute, discrete variable)
- c. The function of population value is _____
(constant, statistic, parameter)
- d. The points (x,cf) are plotted to draw_____
(frequency curve, cumulative frequency curve, histogram)
- e. Open classes are suitable for _____
(fixed variable, continuous variable, discrete variable)

B State true or false. Rewrite correct statement if it is false. (5)

- a. Statistics can be used to study the relation between two or more facts.
- b. Bar diagrams are used to locate mode.
- c. Frequency curves are more preferred than frequency polygon.
- d. Correlation coefficient value lies between 0 and 1.
- e. The limits of middle 50% of the total frequency range are Q1 and Q2.

Q2 a) In a batch of 15 students, 5 students failed in test. The marks of 10 students who passed were 7,9, 8,7,6,9,8,6,4,5. What was the median of marks of all the 15 students? (2)

b) Calculate mode from the following data:

Time (in minutes) : 10-15 15-20 20-25 25-30 30-35 35-40 40-45

No of workers : 8

14 18 25 15 14 6

(3)

c) For the following data calculate coefficient of quartile deviation. (5)

Age(in years) : Below 20 20-30 30-40 40-50 50-60

No. of Persons : 20 18 32 18 12

OR

Q2 x) Calculate median from the following data. Also locate median using graph for this data:

Sales in hundred `.: 0-10 10-20 20-30 30-40 40-50 (5)

No of shops : 5 25 22 18 7

y) Calculate coefficient of variation from the following data: (5)

Classes : 0-50 50-100 100-150 150-200 200-250 250-300

Frequency: 16 26 35 45 31 20

Q3 a) Calculate Karl Pearson's coefficient of correlation from the following data: (5)

X: 12 9 8 10 11 13 7

Y: 14 8 6 9 11 12 3

b) A pair of dice is thrown. Find the probability that (5)

i) the sum of number is 10

ii) product is a square of an integer.

OR

Q3 x) Fit a straight line by the Least Square method to the following data. Hence estimate the production in 2015. (5)

Year : 2010 2011 2012 2013 2014

Production : 20 22 26 38 60

y) A biased coin is tossed thrice. The probability distribution of X: number of heads is represented by

$P(x) = 1/32$ when $x = 0$

$= 9/32$ when $x = 1$

$= 27/32$ when $x = 2, 3$

$= 0$ otherwise

Find the probability that i) no head occurs

ii) exactly one tail occurs

iii) one or more heads occur. (5)

Q 4 a) State addition theorem on probability. (5)

A problem is given to 3 students A,B,C whose chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ respectively. If all of them try it independently, find the probability that the problem will be solved.

b) The watches produced by a certain firm include only one defective watch in every 500 watches, 5 packs of 25 watches each are considered. Find the probability that in 5 packets, there is i) At least one defective watch

ii) More than 2 defective watches (5)

(Given:- $e^{-0.25} = 0.7788$, $e^{-0.4} = 0.6703$, $e^{-2.5} = 0.0821$)

OR

Q 4. x) If for a Poisson variate $P(x=2) = P(x=3)$, find the probability of 4 successes. (5)
(Given: $e^{-3} = 0.04979$)

y) The mean weight of 50 students is 45 kg with a standard deviation of 15 kg. Assuming distribution of weight to be normal, find

i) the number of students with weight between 30kg and 60kg,
ii) the probability of students with weight more than 60kg. (5)

(Area under the standard normal curve between $t = 0$ to $t = 1$ is 0.3413)

Q5 a) A's chance of winning a game against B $\frac{1}{5}$. Find A's chance of winning at least 4 games out of 6. (5)

b) A survey of 36 retired people revealed the mean age at which their income was maximum to be 47 years with a standard deviation of 7.2 years. Find 95% confidence limits of the earnings of people who survive till they retire. (5)

OR

Q.5.x) The height of 40 students selected at random, had a mean height of 158 cms and variance of 39 cms. Assuming level of significance of 5%, test the claim that the students of the population are on the average of height less than 162.5 cms. (5)

y) A sample of 100 balls selected from a large consignment of tennis balls gave 10% bad balls. Find 99% confidence limits for the percentage of bad balls in the consignment. (5)