BBA 2nd sem.

Total number of printed pages–6

47(2) BUST 2·3

2010

BUSINESS STATISTICS

Paper : 2·3

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Fill in the blanks : 1×5=5

   (a) In ancient times, Statistics was called the science of _____ .

   (b) The parameters of a binomial distribution are _____ & _____ .

   (c) The correlation co-efficient is independent of change of _____ & _____ .

   (d) The probability of a certain event is _____ .

   (e) Pre Bihu sale in a departmental store is associated with _____ variation.

Contd.

2. Answer the following : 1×5=5

(a) In which probability distribution mean and variance are equal ?

(b) What is the GM of 2, 4 & 8 ?

(c) Which is the best measures of dispersion ?

(d) At what point do the two lines of regression intersect ?

(e) What are the values of mean & S.D. for a standard normal variate ?

3. Answer the following : 2×5=10

(a) Given $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ & $P(A \cup B) = \frac{7}{12}$ find $P(A \cap B)$.

(b) Draw the scatter diagram when $r = +1$ & $r = -1$.

(c) Given $byx = -0.9$ & $bxy = -0.4$; find r.

(d) Mention *two* limitations of Statistics.

(e) A gambler wins Rs. 60 with probability 0·3 and looses Rs. 40 with probability 0·4, find his expected gain.

4. Answer ***any five*** questions from the following : 4×5=20

(a) Discuss the role of statistics in business activities.

(b) For a group of 50 male workers, the mean and S.D. of their monthly wages are Rs. 6300 and Rs. 900 respectively. For a group 40 female workers, these are Rs. 5400 and Rs. 600 respectively. Find the S.D. of monthly wages for the combined group of workers.

(c) A random variable X takes the values 1, 2, 3, 4, & 5 with respective probabilities $\frac{1}{16}$, $\frac{1}{8}$, $\frac{5}{8}$, $\frac{1}{8}$ & $\frac{1}{16}$. Find *(i)* $E(X)$ & *(ii)* $P(1 \leq X \leq 3)$.

(d) Prove that $A.M. \geq G.M. \geq H.M.$

(e) The probability that A hits a target is $\frac{1}{3}$ and the probability, that B hits the target is $\frac{1}{5}$. They both fire at the target. Find the probability that

(i) At least *one* of them hits the target.

(ii) None of them hits the target.

Contd.

(f) Explain the terms 'skewness' & 'kurtosis' in brief.

(g) The regression lines of Y on X & X on Y are respectively $3X - 5Y = 13$ & $2X - Y = 7$. Find (i) r (ii) X when $Y = 10$.

(h) In a singing contest two judges ranked eight candidates in the following manner. Find the rank correlation coefficient

Candidate :	A	B	C	D	E	F	G	H
Judge X :	6	2	8	1	4	5	3	7
Judge Y :	2	5	7	3	4	8	1	6

5. Answer ***any five*** questions from the following :

(a) The profits (in Rs. Lakhs) earned by 100 companies during 1998-99 are shown below :

Profits :	20–30	30–40	40–50	50–60
No. of Companies :	4	8	18	30

60–70	70–80	80–90	90–100
15	10	8	7

Compute its mean & S.D. 4+4=8

(b) What do you mean by Primary and Secondary data ? Explain the various methods of collecting primary data. 3+5=8

(c) Draw a (i) Histogram (ii) Frequency polygon for the following frequency distribution. Also calculate the value of the median from the graph.

Weekly wages :	10–20	20–30	30–40	40–50
No. of workers :	2	9	25	30

50–60	60–70	70–80	80–90
49	62	39	20

90–100	100–110
11	3

4+2+2=8

(d) Find trend values by method of — (i) 5 yearly moving average method (ii) 4 yearly moving average method from the data given below :

YEAR :	1981	1982	1983	1984	1985	1986	1987
SALES ('000Rs.) :	14	17	22	28	26	18	20

1988	1989	1990
24	28	30

4+4=8

(e) From the following data, find the maintenance cost of car which is 10 year old.

Age of Car (yrs) :	2	4	6	8
Maintenance cost ('00Rs.) :	10	20	25	30

8

Contd.

(f) Write down the mathematical form of the Poisson distribution. Give *one* example of its occurrence. State the conditions under which the binomial distribution tends to the Poisson distribution.

1% of a city are colour blind. 200 residents of the city are selected at random. Find the probability that there is *at least one* colour blind among the selected persons.

1+1+2+4=8

(g) Explain the different components of time series citing suitable examples. 8

(h) Discuss the shape of normal curve. Assume that the mean height of students to be 68·22 inches with variance $10 \cdot 8 (inch)^2$. If the height is normally distributed, how many students in a college of 1000 would you expect to be over 72 *inches* tall ?

Given $P(0 \leq Z \leq 1 \cdot 15) = 0 \cdot 3749$. 4+4=8