Total number of printed pages–10

47 (2) BUST 2.3

2013

BUSINESS STATISTICS

Paper : 2.3

Full Marks : 80

Pass Marks : 32

Time : Three hours

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

1. Choose the correct alternatives : 1×10=10

   (i) Who is known as "Father of Modern Statistics" ?

   (a) R. A. Fisher

   (b) C. R. Rao

   (c) P. C. Mahalanobis

   (d) James Bernoulli.

Contd.

(ii) If the average of 7, 9, 12, x, 5, 4 and 11 is 9 then x is

(a) 13

(b) 14

(c) 15

(d) None of these.

(iii) Which is the best measure of dispersion ?

(a) Range

(b) Standard deviation

(c) Quartile deviation

(d) Mean deviation.

(iv) If $P(AB) = P(A) \cdot P(B)$ then the events A & B are

(a) Independent

(b) Dependent

(c) Mutually Exclusive

(d) None of these.

(v) The standard deviation of binomial distribution is—

(a) np

(b) $\sqrt{np}$

(c) npq

(d) $\sqrt{npq}$

(vi) The property of a distribution which expresses its relative peakedness is —

(a) Skewness

(b) Kurtosis

(c) Coefficient of variation

(d) None of these.

(vii) For a Poisson distribution $P(x=x)=\frac{e^{-5}.5^2}{\lfloor 2}$, the variance is—

(a) 5

(b) 2

(c) 10

(d) 8

(viii) Mean = Median = Mode is a property of

(a) Binomial distribution

(b) Poisson distribution

(c) Normal distribution

(d) None of these.

(ix) "Lock out in a factory" is associated with—

(a) Seasonal Variation

(b) Cyclical Variation

(c) Secular Trend

(d) Irregular Variation.

(x) If C is any constant, then

(a) Var $(C) = C$

(b) Var $(C) = 1/C$

(c) Var $(C) = C^2$

(d) Var $(C) = 0$.

2. Answer the following : ***(any five)*** $2\times5=10$

(a) If mean = 26, median = 22, find mode.

(b) Mention *two* sources of secondary data.

(c) Calculate range from the following information :

Daily wages (Rs) :	8-10	10-12	12-14	14-16	16-20
No. of workers :	3	6	12	5	2

(d) Write down *two* differences between a questionnaire and schedule.

(e) If AM = 50, coefficient of variation = 40%, coefficient of skewness = – 0.4, find standard deviation and median.

(f) If $P(A \cup B) = \frac{3}{4}$, $P(\overline{A}) = \frac{2}{3}$ and

$P(A \cap B) = \frac{1}{4}$ find $P(B)$.

(g) The probability distribution of a random variable X is given as—

$X = x$:	-3	-2	-1	0	1	2	3
$P(X = x)$:	$2k$	$3k$	$7k-3$	$3k+1$	$3k$	k	k

find k.

(h) If the two regression coefficients are 0.8 and 1.2, what would be the value of the correlation coefficient ?

3. Answer the following : ***(any five)*** 4×5=20

(a) Write a short note on scatter diagram.

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

(c) Write a short note on Skewness.

(d) A candidate is selected for interview of management trainees for 3 companies. For the first company there are 12 candidates, for the second there are 15 candidates and for the third there are 10 candidates. What is the probability of his getting selected in at least one of the companies ?

(e) In a business venture a man can make a profit of Rs. 2,00,000 with a probability of 0.4 or have a loss of Rs. 1,00,000 with a probability of 0.6. Find the expected gain of the person. Also calculate its variance.

(f) Given $\sum X = 56, \sum Y = 40, \sum X^2 = 524,$

$\sum Y^2 = 256, \ \sum XY = 364, n = 8.$

Find $r\ (X, Y)$

(g) Assuming on an average 5% of the output of a factory making certain parts is defective and the 200 units are in a package, what is the probability that atmost 4 defective parts may be found in a package ? (given $e^{-10} = 0.005$)

(h) It is assumed that 70% students of a class may get first class in the forthcoming university examination. What is the probability that out of a group of 7 candidates, at least 5 students will get first class ?

(i) From the following table find three yearly weighted moving averages taking 1, 2, 3 as weights :

Year :	2007	2008	2009	2010	2011	2012
Sales (in lakh) :	1	2	3	4	5	6

4. Answer the following : ***(any five)***

(a) Discuss the various methods of collecting Primary data. 8

(b) Calculate Mean & Standard deviation from the following frequency distribution

Daily wages (in Rs.) :	130-150	150-170	170-190	190-210	210-230
No. of workers :	8	26	59	43	14

4+4=8

(c) Explain the various advantages of Sample Survey over census. 8

(d) Fit a straight line trend to the following data : 8

Year :	2001	2002	2003	2004	2005	2006
Production (in tonnes) :	101	107	113	121	136	148

(e) Discuss the various components of time series. 8

(f) From the following data of marks obtained by 8 students in Marketing and Finance papers, compute rank coefficient of correlation 8

Marks in Marketing :	15	20	28	12	40	60	20	80
Marks in Finance :	40	30	50	30	20	10	30	60

(g) The following data are about sales and advertisement expenditures of a firm :

	Sales (in crore)	Advertisement expenditure (in crore)
Mean	40	6
S.D.	10	1.5

Coefficient of correlation = 0.9

(i) Estimate the likely sales for a proposed advertisement expenditure of Rs. 10 crore.

(ii) What would be the advertisement expenditure if the firm fixes a sale target of 60 crore rupees. 4+4=8

(h) Write down the properties of normal distribution.

The distribution of weights of 40 students of class VIII is normal with mean 45 and standard deviation 5; find the percentage of students whose weight lies between 40 and 50. 5+3=8
