

BBA 3rd Semester Exam., 2015

BUSINESS MATHEMATICS
AND STATISTICS—II

Time : 3 hours

Full Marks : 60

Instructions :

- (i) The questions are of equal value
- (ii) There are **SEVEN** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question Nos. 1 and 2 are compulsory.

1. Choose the correct options (any six) :

- ~~(a)~~ The type of variable which can take any numerical figure for calculation is classified as
- ~~(i)~~ continuous variable
 - (ii) measuring variable
 - (iii) flowchart variable
 - (iv) discrete variable
- (b) If the calculated value of total sum of squares in sample variance is large, then the variation in data set is considered as
- (i) smaller
 - (ii) greater
 - (iii) zero
 - (iv) negative

~~(c)~~ The quartiles, median, percentiles and deciles are measures of central tendency classified as

- (i) paired average
 - (ii) deviation averages
 - ~~(iii)~~ positioned averages
 - ~~(iv)~~ central averages
- ~~(d)~~ In a set of observations, the unusual lower and higher values are called
- (i) outliers
 - (ii) free liners
 - (iii) central liners
 - ~~(iv)~~ median liners
- (e) In kurtosis, the beta is greater than three and quartile range is preferred for
- (i) mesokurtic distribution
 - (ii) mega curve distribution
 - (iii) leptokurtic distribution
 - (iv) platykurtic distribution

~~(f)~~ If all the values move towards one tail of a distribution, then this scenario results in

- (i) width of distribution
- ~~(ii)~~ height of distribution
- (iii) lengthening the tail
- (iv) shortening the tail

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~~(g)~~ In a negative skewed distribution, the order of mean, median and mode is as

(i) mean < median > mode

~~(ii)~~ mean > median > mode

(iii) mean < median < mode

(iv) mean > median < mode

(h) If regression coefficient for Y on X is greater than 1, then what is the value of regression coefficient X on Y?

(i) Greater than 1

(ii) Less than 1

(iii) Equal to 1

(iv) Less than -1

~~(i)~~ The standard deviation of 10, 16, 10, 16, 10, 10, 16, 16 is

(i) 4

(ii) 6

~~(iii)~~ 3

(iv) 0

(j) If $r = 0$, the lines of regression are

(i) coincide

~~(ii)~~ parallel

(iii) perpendicular to each other

(iv) None of the above

2. Answer any three of the following :

~~(a)~~ Define classical definition of probability with its limitations.

~~(b)~~ Distinguish between partial and multiple correlations.

~~(c)~~ What is the probability of getting a total of 5, when a pair of die is thrown simultaneously?

(d) If the mean and variance of a binomial distribution are respectively 6 and 2.4, find $P(x = 2)$.

(e) State the conditions under which a binomial distribution becomes a normal distribution.

~~3.~~ What are the conditions necessary for a normal distribution to occur? With the help of a suitable diagram, list the chief properties of a normal distribution.

~~4.~~ The average monthly sales of 5000 firms are normally distributed. Its mean and standard deviation are ₹ 36,000 and ₹ 10,000 respectively. Find—

~~(a)~~ the number of firms having sales over ₹ 40,000;

~~(b)~~ the number of firms having sales between ₹ 30,000 and ₹ 40,000.

(Given area under normal curve from 0 to z for $z0.4 = 0.1554$ and $z0.6 = 0.2257$)

5. Mention any four properties of normal distribution.

6. In the production of electric bulbs, the quality specification of their life was found to be normally distributed with average life of 2100 hours and standard deviation of 80 hours. In a sample of 1500 bulbs, find out the expected number of bulbs likely to burn for (a) more than 2200 hours, (b) less than 1950 hours and (c) more than 2000 hours but less than 2150 hours.

7. From a population of size 600, a sample of 60 individuals revealed mean and standard deviation as 6.2 and 1.45 respectively.

(a) Find the estimated standard error.

(b) Construct 96% confidence interval for the mean.

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