

Code : 302304

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## BBA 3rd Semester Exam., 2020

BUSINESS MATHEMATICS AND  
STATISTICS—2

Time : 3 hours

Full Marks : 60

Instructions :

- (i) The marks are indicated in the right-hand margin.  
 (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 answer (any six) :  $2 \times 6 = 12$ 

(a) A numerical value used as a summary measure for a sample, such as a sample mean, is known as

- (i) population parameter  
 (ii) sample parameter  
 (iii) sample statistic  
 (iv) population mean

(b) Statistics branches include

- (i) applied statistics  
 (ii) mathematical statistics  
 (iii) industry statistics

 (iv) Both (i) and (ii)

(c) To enhance a procedure the control charts and procedures of descriptive statistics are classified into

- (i) behavioural tools  
 (ii) serial tools  
 (iii) industry statistics

(iv) statistical tools

(d) Individual respondents, focus groups and panels of respondents are categorized as

- (i) primary data sources  
 (ii) secondary data sources  
 (iii) itemized data sources  
 (iv) pointed data sources

- (e) The variables whose calculation is done according to the weight, height and length are known as
- (i) flowchart variables
  - (ii) discrete variables
  - ✓(iii) continuous variables
  - (iv) measuring variables
- (f) A method used to examine inflation rate anticipation, unemployment rate and capacity utilization to produce products is classified as <https://www.akubihar.com>
- (i) data exporting technique
  - (ii) data importing technique
  - ✓(iii) forecasting technique
  - (iv) data supplying technique
- (g) Graphical and numerical methods are specialized processes utilized in
- (i) education statistics
  - ✓(ii) descriptive statistics
  - (iii) business statistics
  - (iv) social statistics

- (h) The scale applied in statistics which imparts a difference of magnitude and proportions is considered as
- (i) exponential scale
  - (ii) goodness scale
  - ✓(iii) ratio scale
  - (iv) satisfactory scale
- (i) Review of performance appraisal, labour turnover rates, planning of incentives and training programs are examples of
- (i) statistics in production
  - (ii) statistics in marketing
  - (iii) statistics in finance
  - (iv) statistics in personnel management
- (j) The range of a correlation coefficient lies in between
- (i)  $-\infty$  to  $+\infty$
  - (ii) 0 to +1
  - ✓(iii) -1 to +1
  - (iv) 0 to  $+\infty$

2. Answer any *three* of the following short answer-type questions : 4×3=12

(a) Distinguish primary and secondary methods of data collection with examples.

(b) Show that the simple and weighted arithmetic means of the first  $n$  natural numbers taking the weights being the corresponding numbers are  $\frac{(n+1)}{2}$  and  $\frac{(2n+1)}{3}$  respectively.

(c) Define why standard deviation is considered as the best 'measure of dispersion'.

(d) Define conditional concept of probability with a real-life application.

(e) If  $u+5x=6$  and  $3y-7v=20$  and correlation coefficient between  $x$  and  $y$  is 0.58, then what would be the correlation between  $u$  and  $v$ ?  
 $x+y=0.58$   
 $y=0.58-x$

Answer any *three* of the following long answer-type questions : 12×3=36

3. (a) Construct a frequency distribution table with tally mark and frequency

distribution (inclusive type) with 5 class intervals for the following marks scored by a class of 40 students : 6

[20, 11, 11, 37, 15, 40, 31, 29, 38, 27, 13, 07, 29, 25, 37, 42, 30, 10, 09, 27, 25, 18, 02, 09, 47, 17, 11, 32, 41, 06, 29, 15, 13, 39, 21, 40, 10, 15, 03, 04]

(b) Mean of the following frequency table is 50. Total frequency is 120. For two classes, namely 20-40 and 60-80, frequencies are missing. Find the missing frequencies of those two classes : 6

Class interval	0-20	20-40	40-60	60-80	80-100	Total
Frequency	17	?	32	?	19	120

4. (a) Calculate standard deviation of the weights of the 100 students of a certain university with the following data : 6

Weight (kg)	60-62	63-65	66-68	69-71	72-74
No. of students	5	18	42	27	8

(b) (i) Define classical definition of probability.

(ii) A candidate is selected for interview of Executives for 3 firms A, B and C. The numbers of candidates for the firms A, B and C are 12, 15 and 10 candidates respectively. What are the chances of his/her getting job at least at one firm?  $2+4=6$

5. (a) Discuss business forecasting in terms of strategic aspects of management decisions. 6
- (b) Determine the equation of a straight line which 'best fits' the following data : 6

Year	2000	2001	2002	2003	2004
Sale (₹ '000)	35	56	79	80	40

6. (a) Define the concept of regression. Why are there always two lines of regression? 4

(b) Equations of two lines of regression are

$$4x + 3y + 7 = 0 \text{ and } 3x + 4y + 8 = 0$$

Find—

- (i) mean value of  $x$  and  $y$ ;
- (ii) regression coefficient of  $b_{xy}$  and  $b_{yx}$ ;
- (iii) correlation coefficient between  $x$  and  $y$ . 8

7. Discuss the following with management applications (any three) :  $4 \times 3 = 12$

- (a) Scattered diagram—pictorial presentation
- (b) Standard deviation
- (c) Poisson distribution—properties and business application
- (d) Properties of correlation coefficient
- (e) Properties of normal distribution

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