



Dezyne École College

Bachelor of Business Administration (B.B.A.) First Year-2nd Semester

Business Statistics & Mathematics

Unit-I- Introduction to Statistics, Data Collection & Analysis

1. "Statistics only furnishes a tool, necessary through imperfect which is dangerous in the hands of those who do not know its uses & deficiencies. "In the light to this statement, examine the chief functions & limitations of statistics. (2019)
2. You are requested to plan a survey with a view to control & abolish street begging in Delhi. Outline the main steps you would take & a draft suitable questionnaire to collect the necessary data. (2019)
3. Illustrate graphically the distinction between a frequency polygon, a histogram & ogive curve. Comment on their uses. (2019)
4. What are the various methods of collecting statistical data? Which of these is most reliable and why? (2016)
5. Discuss the meaning and scope of statistics and also explain some of the uses of statistics in business. (2015)
6. Examine critically the important methods of collection of primary data. Can any one method be called the best under all circumstances? (2015)
7. What do you mean by 'Statistics'? How is it helpful in planning? (2018)
8. What are the various methods of collecting statistical data? Which of these is most reliable & why? (2018)
9. What do you understand by "Secondary data"? Mention the various sources of Secondary Data. (2017)
10. Define Statistics. Discuss its importance. (2017)
11. Explain the advantages & disadvantages of Graphical Presentation of data. (2017)
12. "The science of statistics is most useful servant but only of great value to those who understand its proper use. "Comment. (2016)
13. Distinguish giving suitable examples, between: (2015)
 - a. Continuous and discrete series
 - b. Exclusive and Inclusive class intervals
 - c. More than and less than Frequency tables
 - d. Simple and bivariate frequency tables
14. Explain the following: (2014)
 - a. Functions of statistics
 - b. Causes of distrust of statistics
15. Clearly distinguish between primary & secondary data and explain in brief the various methods of collecting primary data. (2014)
16. Define statistics and discuss in brief its scope and importance. (2012)
17. Explain briefly the limitations and distrust of statistics. (2012)

Unit-II- Measures of Central Tendency, Time Series & Index Numbers

1. Calculate Mean & Median of the following data: (2019)

Profits (Rs.Lakhs):	10-20	10-30	10-40	10-50	10-60	10-70	10-80	10-90
Frequency	4	16	56	97	124	137	146	150

2. A purchasing agent obtained samples of 60watt bulbs from two companies. He had the samples tested in his own laboratory for lengths of life with the following results. (2019)

3.

Length of life(in hours)	Samples from Co.A	Samples from Co.B
1700 & under 1900	10	3
1900 & under 2100	16	40
2100 & under 2300	20	12
2300 & under 2500	8	3
2500 & under 2700	6	2

(i) Which Co's bulbs do you think are better in terms of average life?

(ii) If prices of both the co's are same, which co's bulbs would you buy & why?

4. Discuss the relative merits of various measures of dispersion. (2018)

5. Calculate the arithmetic mean from the following data(Age in years):

More than :	0	5	10	15	20	25	30
No.of Persons:	100	95	85	71	51	16	01

6. The average wages of first group of worker's is Rs.12 & their number is 60, while the average wages of all the worker's is Rs.13.20 & their number is 100. Calculate the average wages of the second group. (2017)

7. The following is the record of goals scored by team 'A' in a hockey season. Calculate Standard Deviation & its coefficient.

No. of Goals scored in a match	1	3	5	7	8
No. of matches	1	2	3	4	5

8. Compute Semi-Inter Quartile Range and its coefficient from the following data : (2016)

Central size	Frequency
1	2
2	9
3	11
4	14
5	20
6	24
7	20
8	16
9	5
10	2

9. Find out median and mean from the following series (2016)

Marks more than	No. of students
0	240
10	215
20	200
30	180
40	165

50	145
60	115
70	50
80	0

Calculate median marks by the candidates.

10. Calculate mean and median from the following data: (2014)

Years	Frequency
0-10	5
10-20	10
20-30	14
30-40	22
40-50	21
50-60	16
60-70	9
70-80	3
	100

11. From the data given below, find the coefficient of correlation between the driver's age & the number of accidents made by him. (2019)
12. Explain the meaning of Correlation & distinguish between Positive & Negative Correlation. (2017)
13. Define regression. Why are there 2 regression lines? Under what condition can there be only one regression line? (2016)
14. Find out coefficient of correlation between age & playing habits from the following data: (2018)

Age:	15-16	16-17	17-18	18-19	19-20	20-21
No. of students: 200	270	340	360	400	300	
Regular Players: 150	162	170	180	180	120	

15. Define Regression. Why are there two regression lines? Under what conditions can there be only one regression line? (2018)
16. What is Interpolation? What are the assumptions underlying in Interpolation? (2018)
17. Calculate Seasonal fluctuations by simple average method from the following data: (2017)

Year	Summer	Monsoon	Autumn	Winter
2000	30	81	62	119
2001	33	104	86	171
2002	42	153	99	221
2003	56	172	129	235
2004	67	201	136	302

18. Following figures relate to demand and price of a commodity: (2015)

Demand (Kg.)	Price per Kg (RS.)
20	10
22	12
24	16
26	18

28	20
30	20
32	22
34	24
36	24
38	24

Calculate the two regression coefficient and find out the two regression equations. Estimate the average probable price when the demand of the commodity is 31 Kg.

19. Find out Karl Pearson coefficient of correlation between X and Y from the following data: **(2014)**

X	10	12	15	18	25	35	45	50	55	65
Y	5	7	13	15	20	21	29	30	36	44

20. State the difference between regression and correlation. **(2014)**

21. What is time series? Name the components of a time series. Explain their salient features. **(2014)**

22. From the following data , Calculate Coefficient of Correlation between the age & success in the examination: **(2012)**

Age(in yrs)	% of failures
18	38
19	40
20	35
21	32
22	34
23	37
24	42
25	46
26	52
27	56

23. Calculate Seasonal fluctuations by simple average method from the following data: **(2017)**

Year	Summer	Monsoon	Autumn	Winter
2000	30	81	62	119
2001	33	104	86	171
2002	42	153	99	221
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Unit-III- Linear Programming Problem & Matrices

1. (a) The total cpst of manufacturing three items is given by the following table:

	Labour(hrs.)	Materials (Units)	Sub-Contracted Work(Units)
Item A	40	100	50
Item B	80	150	80
Item C	100	200	100

Labour Costs Rs.2 per hour , units of material costs 50 paise each & a unit of sub contracted work cost Rs. 1 per unit . Find the total cost of manufacturing 3000, 2000 & 1000 items of type A,B & C respectively. **(2019)**

(b) Use the theory of determinants to solve the following system of linear equations.

(2019)

$$x + y + z = 9$$

$$2x + 5y + 7z = 52$$

$$2x - y - z = 0$$

2. Find the adjoint matrix of: (7+7)

(2019)

$$A = \begin{bmatrix} 1 & 2 & -1 \\ -2 & 1 & 1 \\ 3 & -3 & 2 \end{bmatrix}$$

And verify that $A(\text{adj } A) = (\text{adj } A)A = [A]I$.

3. An Insurance company has offices located in every division, every district & every taluka in a state. Then there are 7 divisions, 25 districts and 250 talukas in the state. Each office has 1 head clerk, 2 cashiers, 3 clerks, 1 typist & 1 peon. A district office has in addition 2 clerks & 1 peon. A divisional office an addition 1 office superintendent, 3 clerks, 1 typist & 1 peon. The basic monthly salaries are as follows: (2018)

Office Superintendent	8,250
Head Clerk	6,500
Cashier	5,500
Clerk	5,000
Typist	5,000
Peon	3,500

Using Matrix Algebra, Find:

- Total number of post of each kind in all the offices taken together.
 - Total basic monthly salary bill of each kind of office.
 - Total Basic monthly salary bill of all the offices taken together.
4. Two farmers Ram Kishan & Gurcharan Singh cultivate only three varieties of rice namely Basmati, Permal & Naura. The sale (in rs.) of these varieties of rice by both the farmers in the month of September & October are given by the

following matrices A & B :

(2017)

September sales (in Rs.)

	Basmati	Permal	Naura	
A =	10000	20000	30000	Ram Kishan
	50000	30000	10000	Gurcharan Singh

October sales (in Rs.)

	Basmati	Permal	Naura	
B =	5000	10000	6000	Ram Kishan
	20000	10000	10000	Gurcharan Singh

Find :

- What were the combined sales in September and October for each farmer in each variety?
- What was the change in sales from September to October?
- If both farmers receive 2% profit on gross rupees sales, compute the profit for each farmer & for each variety sold in October.

5. Find the inverse of the matrix: (2016)

$$A = \begin{vmatrix} 1 & 3 & 0 \\ -2 & 3 & 3 \\ 1 & 1 & 4 \end{vmatrix}$$

And hence find the inverse of the following system of equations:

$$x - 2y + z = 0$$

$$3x + 3y + z = 7$$

$$0x + 3y + 4z = 7$$

6. A firm manufacturing two types of electric items A & B, can make a profit of Rs. 20 per unit of A & Rs.30 per unit of B. Each unit of A requires 3 motors & 2 transformers and each unit of B requires 2 motors & 4 transformers. The total supply of these per month is restricted to 210 motors & 300 transformers. Type B is an export model requiring a voltage stabilizer which has a supply restricted to 65 units per month. (2019)

- i. Formulate Linear Programming problem for maximum profit.(7)
- ii. Solve it graphically.(7)

7. A firm manufacturing 2 types of electrical items, A & B; can make a profit of Rs. 20 per unit of A & Rs.30 per unit of B. Each unit of A requires 3 motors & 2 Transformers & each unit of B requires 2 motors & 4 transformers. The total supply of these per month is restricted to 210 motors & 300 transformers. Type B is an export model requiring a voltage, stabilizer, which has a supply restricted to 65 units per month. (2018)

- i. Formulate above as a linear programming problem for maximum profit.
- ii. Also, solve it graphically to determine how many electrical items A & B the firm should manufacture in order to maximize profit.

8. Logo motion is a sports apparel firm that manufactures jackets, hats, sweat outfits & T-shirts for college & professional athletic teams. It has contracted with the state university bookstore for two types of logo jackets, a deluxe jacket & a regular jacket. The deluxe jacket is heavier, with more pockets, a nicer lining & an embroidered school name & logo. The regular jacket has sewn on prefabricated logos & lettering. The major steps in the manufacture of these jackets are cutting the materials, sewing & decorating with embroidery or sewn on items.

The following table shows the resource requirements for each type of jacket & total weekly availability of resources.

School Jacket	Cutting (hr.)	Sewing (hr.)	Decoration (hr.)	Profit (\$)
Deluxe	0.16	0.47	0.40	18
Regular	0.15	0.28	0.14	12
Resource Availability	40.00	80.00	55.00	

Formulate a linear programming model to determine how many deluxe & regular jackets the company should produce in order to maximize profit. (2017)

9. A firm manufacturing two types of electrical items, A & B; can make profit of Rs. 20 per unit of A & Rs.30 per unit of B. Each unit of A requires 3 motors & 2 transformers & each unit of B requires 2 motors & 4 transformers. The total supply of these per month is restricted to 210 motors & 300 transformers. Type B is an export model requiring a voltage stabilizer, which has a supply restricted to 65 units per month. (2016)

- i. Formulate above as linear programming problem for maximum profit.
- ii. Solve the above linear programming problem graphically.

10. The following matrix gives the units of material & units of labour required to produce three types of cars Mitsubishi, Ford, Alto. (2016)

	Mitshubishi	Ford	Alto
Units of Material	30	24	18
Units of Labour	8	11	13

If in this month's Production the cost for each unit of material is Rs. 2,500 & the cost of each unit of labour is Rs.3,300. What is the cost of manufacture these three types of cars.

11. Horticulture wishes to mix fertilizer that will provide Minimum of 15 units of Potash, 20 units of nitrate & 24 units of phosphate. Brand 1 provide 3 units of potash, 1 unit of nitrate & 3 units of phosphate; it costs Rs.120. Brand 2 provides 1 unit of potash, 5 units of nitrate & 2 units of phosphate ; it cost Rs.60. Express the least cost combination of fertilizers that will meet the desired specifications as equation & inequalities. (2015)

12. Solve the following LPP by graphical method:

$$\text{Min } Z = 6X_1 + 14X_2$$

$$5X_1 + 4X_2 \geq 60$$

$$3X_1 + 7X_2 \leq 84$$

$$X_1 + 2X_2 \geq 18$$

$$X_1, X_2 \geq 0$$

13. Explain the following (Any 4):

(2015)

- L.P.P
- Graphical Method
- Constraints
- Alternative courses of action
- Objective function

14. The ABC Company has been a producer of picture tube for television sets & certain printed circuits for radios. The company has just expanded into full scale production & marketing of AM & AM-FM radios. It has built a new plant that can operate 48hrs per week. Production of an AM radio in the new plant will require 2hrs & production of an AM- FM radio will require 3hrs each. AM radio will contribute Rs.80 to profits. The marketing department of 15AM radios & 10 FM radios can be sold each week :

- Formulate a linear programming model to determine the optimal production mix of AM-FM radios that will maximize profit.
- Solve the problem using graphic method.

15. A firm manufactures headache pills in two sizes A & B. Size A contains 2 grains of aspirin, 5 grains of bicarbonate & 1 grain of codeine; Size B contains 1 grains of aspirin, 8 grains of bicarbonate & 6 grain of codeine. It has been found by users that it requires at least 12 grains of aspirin, 74 grains of bicarbonate & 24 grains of codeine for providing immediate effects. Determine graphically the least number of pills a patient should have to get immediate relief. (2012)

2011

**Bachelor of Business Administration
(BBA) Part - II
(Second Year) EXAMINATION, 2011**

(Semester III and IV Combined)

BUSINESS STATISTICS - II

Paper - BBA - 203

Time allowed : Three Hours

Maximum Marks : 70

Attempt five questions out of seven. However, the word limit of each answer should not exceed 400. In case the question paper contains a case study, it will be considered equivalent to two questions and in that situation, the word limit should be 800 for answering the case study and further the candidate has to attempt three more questions with a word limit of 400 for each question.

Note : No supplementary answer sheet should be given to the candidate.

Q-1. Give the following data : (14)

Year	Weekly take-home Pay (Wages) (In Rs.)	Consumers Price Index
2002	109.50	112.80
2003	112.20	118.20
2004	116.40	127.40
2005	125.08	138.20
2006	135.40	143.50
2007	138.10	149.80

- What is the real average weekly wage for each year ?
- In which year did the employees have the greatest buying power ?
- What percentage increase in weekly wages for the year 2007 is required to provide the same buying power that the employees enjoyed in the year in which they had the highest real wages ?

(8+3+3)

Q-2. Fit a parabolic trend to the following time series data and estimate the production in 2012. (14)

Year	Production (in '000 units)
2001	42
2002	49
2003	62
2004	75
2005	92
2006	122
2007	158

Q-3. Discuss the essentials of business forecasting and explain various techniques and tools of it. (14)

Q-4. (a) A bag contains 2 white and 3 black balls. Four persons A, B, C & D in the ordered named each draw one ball and do not replace it. The person to draw a white ball receive Rs. 200. Determine their expectations.

(b) A product assembled from three components X, Y and Z the probability of these components being defective is respectively 0.01, 0.02 and 0.05. What is the probability that the assembled product will not be defective. (7 + 7)

Q-5. Define probability, Explain the meaning of poisson distribution, state the conditions under which this distribution is used. (4 + 6 + 4)

Q-6. (a) Five coins whose faces are marked 2 and 3 are thrown. What is the chance of obtaining a total of 12 ? (4)

(b) Four coins are tossed at a time, 208 times. Number of heads observed at each throw is recorded and the results are as follows;

No. of heads at a throw	Frequency
0	5
1	48
2	112
3	35
4	8
	208=N

Fit a binomial distribution to the given data (10)

Q-7. The life time of electric bulbs for a random sample of 10 from a large consignment gave the following data :-

Item	Life in ' 000 Hours
1	4.2
2	4.6
3	3.9
4	4.1
5	5.2
6	3.8
7	3.9
8	4.3
9	4.4
10	5.6

Can we accept the hypothesis that the average life time of bulbs is 4000 hours. (to $.05 = 2.262$) (14)

Roll No. :.....

B

5241

**Bachelor of Business Administration
(BBA) (Part II) (Second Year)
EXAMINATION, 2016**

Paper-BBA-203

BUSINESS STATISTICS-II

Time allowed : Three hours

Maximum marks : 70

*Attempt any five questions out of seven.
However, the word limit of each answer
should not exceed 400. In case the
question paper contains a case study, it
will be considered equivalent to two
questions and in that situation, the word
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case study and further the candidate has
to attempt three more questions with a
word limit of 400 for each question.*

*No Supplementary answer sheet should
be given to the candidates.*

PTO

सात प्रश्नों में से 5 (पाँच) प्रश्न कीजिये। प्रत्येक उत्तर की शब्द सीमा 400 शब्द से अधिक नहीं होनी चाहिए। प्रश्न-पत्र में केस स्टडी होने की स्थिति में यह केस स्टडी दो प्रश्नों के बराबर होगी और इस केस स्टडी के उत्तर की शब्द सीमा 800 शब्दों से अधिक नहीं हो तथा परीक्षार्थी तीन अन्य प्रश्न हल करेगा जो कि 400 शब्द सीमा से अधिक नहीं हो।

नोट—परीक्षार्थियों को पूरक उत्तर-पुस्तिकाएँ प्रदत्त नहीं की जायेंगी।

1. Construct Fisher's Ideal Index Number from the following data and show that it satisfies the Time Reversal Test and Factor Reversal Test :

Item	2011		2012	
	Quantity	Total expenditure	Price	Total expenditure
A	8	16	4	24
B	10	50	6	30
C	14	56	5	50
D	19	38	2	26

8+6

निम्नलिखित समकों से फिशर के आदर्श सूचकांक की रचना कीजिये तथा दर्शाइये कि यह समय उत्क्राम्यता तथा तत्त्व उत्क्राम्यता परीक्षण को पूरा करता है :

मद	2011	2012
मात्रा	कुल व्यय	कीमत कुल व्यय
A	8 16	4 24
B	10 50	6 30
C	14 56	5 50
D	19 38	2 26
		8+6

2. Following data relate to production of a factory in ('000) tonnes :

Year	Production (in thousands)
2006	77
2007	88
2008	94
2009	85

$$A = 87.21$$

$$b = 1.026$$

2010	91
2011	98
2012	90

(i) Fit a straight line trend by method of least squares.

(ii) What is monthly increase in production ?

(iii) Convert your annual trend equation into a monthly trend equation. 51.91 8+3+3

निम्न आंकड़े ('000) (हजार टनों) में कारखाने के उत्पादन से सम्बन्धित हैं :

वर्ष	उत्पादन (हजार में)
2006	77
2007	88
2008	94
2009	85
2010	91
2011	98
2012	90

- (i) न्यूनतम वर्ग रीति से सरल रेखा उपनति की रचना कीजिये।
- (ii) उत्पादन में मासिक वृद्धि कितनी है ?
- (iii) वार्षिक उपनति समीकरण को मासिक उपनति समीकरण में बदलिये।

8+3+3

3. Write short notes on the following :

- (i) Base shifting
- (ii) Splicing of index number
- (iii) Theories of Business forecasting
- (iv) Objects of Business forecasting

3+3+4+4

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिये :

- (i) आधार परिवर्तन
- (ii) सूचकांकों का शिरोबंधन
- (iii) व्यावसायिक पूर्वानुमान के सिद्धान्त
- (iv) व्यावसायिक पूर्वानुमान के उद्देश्य

3+3+4+4

4. (a) A doctor is to visit a patient once in the month of November. Find the probability that he visits on a date which is a multiple of 5 or 6.

4

एक डॉक्टर को नवम्बर माह में मरीज को एक बार देखना है। प्रायिकता बताइये कि वह ऐसी तिथि को देखेगा जो 5 या 6 की गुणक हो। 4

- ✓ (b) There are 30 students in M.Com. Final and 50 students in M.Com. Previous in an University. Three (3) representatives of Commerce Association are to be selected one by one. Find the probability that they are alternatively of different classes. 5

एक विश्वविद्यालय में एम.कॉम. उत्तरार्द्ध में 30 विद्यार्थी हैं तथा एम.कॉम. पूर्वार्द्ध में 50 विद्यार्थी हैं। वाणिज्य संघ के तीन प्रतिनिधियों का एक-एक कर चुनाव किया जाता है। प्रायिकता बताइये कि वे वैकल्पिक रूप से विभिन्न कक्षाओं के हों। 5

- ✓ (c) One bag contains 5 white balls and 3 red balls. Second bag contains 3 white and 4 red balls and the third bag contains 2 white and 8 red balls. One red ball was drawn. What is the probability that it was drawn from the third bag ? 5

एक थैले में 5 सफेद गेंदें तथा 3 लाल गेंदें हैं। दूसरे थैले में 3 सफेद तथा 4 लाल गेंदें हैं और तीसरे थैले में 2 सफेद तथा 8 लाल गेंदें हैं। एक लाल गेंद निकाली गई। इस बात की प्रायिकता क्या है कि यह तीसरे थैले में से निकाली गई है ? 5

- ✓ 5. What do you understand by the term 'Probability' ? State

the addition and multiplication theorems of probability giving suitable examples. 14

‘प्रायिकता’ शब्द से आप क्या समझते हैं ? प्रायिकता के योग एवं गुणन प्रमेय को उदाहरण की सहायता से समझाइये। 14

6. (a) Mean of a random sample of 100 units is 64 cms, if the standard deviation of sample is 3 cms. Set up probable limits of the mean height of the population at 95% and 99% level of confidence. 5

समग्र में से दैव आधार पर 100 इकाइयों के एक न्यादर्श की माध्य ऊँचाई 64 सेमी. है। यदि उसका प्रमाप विचलन 3 सेमी. हो तो समग्र के लिए औसत ऊँचाई की 95% व 99% विश्वास्यता स्तर पर सम्भाव्य सीमाएँ निर्धारित कीजिये। 5

- (b) In a multiple choice quiz each question has 5 alternatives, out of them only one answer is correct. What is the probability of 6 correct answers out of 10 questions? 4

एक बहुविकल्पी कूट प्रश्नोत्तरी में प्रत्येक प्रश्न के पांच विकल्प दिये गये हैं, जिनमें से एक उत्तर सही है। दस प्रश्नों में से छः के उत्तर सही होने की क्या प्रायिकता है ? 4

- (c) The average number of customers, who appear at a counter of a certain bank per minute is two. Find the probability that during a given minute three or more customers will appear. (Given $e^{-2} = 0.1353$) 5

किसी बैंक के पटल पर प्रति मिनट औसत रूप से दो ग्राहक पहुँचते हैं। किसी एक निश्चित मिनट में इस बात की प्रायिकता ज्ञात कीजिये कि तीन या अधिक ग्राहक पहुँचेंगे। (दिया गया है $e^{-2} = 0.1353$) 5

7. Write short notes on the following :

(i) Random sampling

(ii) Poisson distribution

(iii) Features of normal distribution

4+4+6

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिये :

(i) दैव न्यादर्श रीति

(ii) प्वाँयसन बंटन

(iii) प्रसामान्य बंटन की विशेषताएँ

4+4+6

Roll No.....

B

1173

**Bachelor of Business Administration (BBA)
(Part II) (Semester III)
EXAMINATION, 2018**

Paper-bba-303

BUSINESS STATISTICS-II

Time allowed : Three hours

Maximum marks : 70

Attempt five questions out of seven. In case the question paper contains a Case Study, it will be considered equivalent to two questions and in that case the student in addition to solving case study will have to answer any three from remaining five questions.

1. (a) Calculate weighted index number for 2018 Weighted

PTO

Aggregative Method and Weighted Average of Relative Method from the following table :

Item	Quantity	Price in 2017	Price in 2018
Bricks	10 units	100	161
Timber	7 units	200	210
Boards	15 units	50	60
Sand	9 units	20	30
Cement	10 units	10	14

- (b) Derive the analytical relationship between Laspeyre's and Paasche's price index numbers. Under what circumstances are the two index numbers equal ?

- 2 (a) Explain briefly the additive and multiplicative models of time series. Which of these models is more popular in practice and why ?
- (b) Given the following ratio of observed data to moving averages, compute the seasonal indices :

Year	Quarter			
	I	II	III	IV
1	-	-	87	92

2	105	100	90	93
3	110	105	93	100
4	115	110	-	-

3. (a) Two balls are drawn from a bag containing 8 red and 7 white balls. Find the chance that :

- (i) They are both red
- (ii) They are both white
- (iii) One is red and the other white

- (b) The probability that a man will be alive for 25 years is $\frac{3}{5}$ and the probability his wife will be alive for 25 years is $\frac{2}{3}$. Find the probability that :

- (i) Both will be alive
- (ii) Only the man will be alive
- (iii) Only the wife will be alive
- (iv) At least one will be alive.

4. (a) What is normal distribution ? Point out its important properties.

(b) Fit a binomial distribution to the following data :

X	f
0	28
1	62
2	45
3	10
4	4

5. (a) As a tailor prepared suits for a number of hits customers after the preliminary trials and retrials he had to alter the suits as follows :

No. of trial after preliminary trial	No. of cases
0	200
1	75
2	20
3	5
	300

By applying Poisson distribution, calculate the theoretical frequencies $e^{-m} = 0.433$

- (b) State the conditions under which the binomial distribution tends to :
- (i) The Poisson distribution
 - (ii) The Normal distribution
6. (a) "One can know the characteristics of the population by studying only a part of it." Comment.
- (b) Critically examine the various probability sampling methods.
7. (a) Explain the utility of business forecasting.
- (b) Explain Input-Output analysis method of business forecasting.

Roll No:- _____

6073

**Bachelor of Business Administration (BBA)
(Part-II) (Semester-III) EXAMINATION, 2019**

BUSINESS STATISTICS - II

PAPER-BBA-303

Time Allowed - Three Hours

Maximum Marks - 70

Attempt five questions out of seven. In case the question paper contains a case study, it will be considered equivalent to two questions and in that case the student in addition to solving case study will have to answer any three from remaining five questions.

1-

Prepare index number for three year taking average price as base.

Year	Price in Rs.		
	Wheat	Cotton	Oil
2016	125	500	150
2017	100	450	125
2018	75	490	100

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Contd.

- 2- How are the consumer price Index number Constructed? Explain with example.
- 3- What is a time series? Name the components of a time series. Explain their salient features.
- 4- A committee of 5 is to be formed out of a group of 8 boys and 7 girl. Find the probability that in the committee there will be 3 boys and 2 girls.
- 5- Define probability and explain the importance of this concept in statistics.
- 6- Fit a poisson distribution to the following figures.
- | | | | | | |
|---|----|----|----|---|---|
| X | 0 | 1 | 2 | 3 | 4 |
| f | 42 | 36 | 14 | 6 | 2 |
- 7- Define Binomial Distribution with an example.



**Bachelor of Business Administration (BBA)
(Part - II) (Semester - III) Examination, 2021**

BUSINESS STATISTICS - II

Paper - BBA - 303

Duration of Examination: 1½ Hours

परीक्षा की अवधि: 1½ घण्टा

Max. Marks: 42

पूर्णांक: 42

Instructions to the Candidates:

परीक्षार्थी के लिए निर्देश:-

Candidate is required to attempt any three question. (upto 400 words).

(3x14=42 Marks)

कोई तीन प्रश्न का उत्तर दीजिये। प्रश्न का उत्तर 400 शब्दों से अधिक नहीं होना चाहिये।

Q-1. What is an Index Number? Narrate its uses or importance for an Industry?

Q-2. Calculate by short cut method of least squares, the trend values of the following data :

Year :	2010	2011	2012	2013	2014
Sales (000 Rs):	35	56	79	80	40

Q-3. What are the components of time series? Bring out the significance of moving averages in analysing a time series and point out its limitations.

Q-4. When are two events said to be independent in the probability sense? Give examples of dependent and independent events.

Q-5. If one card is drawn at random from 52 playing cards, what is the probability that the card will be :

(i) Diamond

(ii) Queen of Diamond

Q-6. Differentiate between Binomial, Poisson and Normal Probability distributions.

Q-7. A Binomial variate χ has mean 5 and variance $10/3$. Calculate (i) n and (ii) p .



**Bachelor of Business Administration
(BBA) (Part-II) (Semester-III)
Examination, 2022
Paper -bba - 303
BUSINESS STATISTICS-II**

Duration of Examination: 3 Hours

परीक्षा की अवधि: 3 घण्टा

Max. Marks: 70

पूर्णांक: 70

Instructions to the Candidates:परीक्षार्थी के लिए निर्देश:-

Attempt five questions out of seven. In case the question paper contains a Case Study, It will be considered equivalent to two questions and in that case the student in addition to solving case study will have to answer any three from remaining five questions.

- 1- "Index numbers are economic barometers". Explain this statement and mention what precautions should be taken in making use of any published index numbers?
- 2- What is meant by business forecasting? What are its objects. Explain briefly the principal methods used in business forecasting?
- 3- In how many ways can 12 cups be put in three trays in equal numbers?
- 4- Write a short notes on:
 - (a) Compound events.
 - (b) Probability
- 5- Fit a binomial distribution to the following data:

x:	0	1	2	3	4	5
f:	10	10	30	25	15	10
- 6- Define poisson distribution with an example, giving its general equation. Also state the conditions under which it is used.
- 7- What are the chief properties of Normal Distribution.

* * * * *



7002

Bachelor of Business Administration
BBA Pt-I (Semester-II)
Examination, 2023
Paper - BBA- 202
Business Statistics-I

Duration of Examination: 3 Hours

परीक्षा की अवधि: 3 घण्टा

Max. Marks: 70

पूर्णांक: 70

Instructions to the Candidates:परीक्षार्थी के लिए निर्देश:-

Attempt five questions out of seven. In case the question paper contains a Case Study, It will be considered equivalent to two questions and in that case the student in addition to solving case study will have to answer any three from remaining five questions.

1- "Statistics is not a science, it is a scientific method". Discuss critically. Explain objectives & limitation of statistics.

2- Distinguish between primary data and secondary data. Examine critically the important methods of collection of primary data.

3- Calculate mean, median and mode from the following data:

Wages in Rs.	No. of persons
Below 110	04
Below 120	10
Below 130	30
Below 140	62
Below 150	95
Below 160	112
Below 170	120
Below 180	122

4- Two cricketers scored the following runs in the several innings. Find who is better run scorer and who is more consistent player.

A:	42	17	83	59	72	76	64	45	40	32
B:	28	70	31	0	59	108	82	14	3	95



7002

- 5- For certain X and Y series which are correlated, the two lines of regression are given below:

$$5X - 6Y + 90 = 0 \text{ (i)}$$

$$15X - 8Y - 130 = 0 \text{ (ii)}$$

Find which is regression of Y on X and which is X on Y. Find the means of two series and the correlation co-efficient.

- 6- What is meant by interpolation? What are the assumptions on which methods of interpolation is based? Distinguish between interpolation and extrapolation.

- 7- From the following time series obtain trend value by three (3) yearly moving averages.

Year	Sales (in '000 Rs.)
2013	8
2014	12
2015	10
2016	13
2017	15
2018	12
2019	16
2020	17
2021	14
2022	17

* * * * *



6002

Bachelor of Business Administration
BBA (Part-I) (Semester-II)
Examination, 2024
Paper BBA-202
Business Statistics and Mathematics

Duration of Examination: 3 Hours

परीक्षा की अवधि: 3 घण्टा

Max. Marks: 70

पूर्णांक: 70

Instructions to the Candidates:परीक्षार्थी के लिए निर्देश:-**Note:- The question paper is divided into 02 Parts : Part- A & Part B.****Part-A**

Part-A Will consist of 10 compulsory questions. Answer to each question shall be limited up to 50 words. Each question will carry 02 marks. Total 20 Marks. (Marks-10x2=20)

Part-B

Part-B Will consist of 10 questions. Student will have to answer 05 questions, selecting At least one questions from each unit. The answer to each question shall be limited upto 400 words. Each question carries 10 Marks. Total 50 Marks. (Marks-5x10=50)

Part-A

- 1- Write methods of data collection.
- 2- Define Ogive curve.
- 3- Write formula of mode for grouped frequency distribution.
- 4- Write names of four measures of dispersion.
- 5- Explain difference between interpolation and extrapolation.
- 6- Define index number.
- 7- Write any four types of matrices with example.
- 8- Find the inverse of matrix $A = \begin{bmatrix} 4 & 7 \\ 1 & 2 \end{bmatrix}$
- 9- Find the value of determinant $\begin{vmatrix} y+z & x & x \\ y & z+x & y \\ z & z & x+y \end{vmatrix}$
- 10- Explain graphical method to solve linear programming problem of maximization type.

Part-B**Unit-I**

- 11- Explain types of graph and their merits and demerits.



6002

12-

Find the arithmetic mean of the following distribution.

x	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
y	5	15	25	35	45	55	65	75	85	95

13-

If the median and mode of the following distribution are 27 and 26 respectively, then find the missing frequencies in the distribution.

Class	0-10	10-20	20-30	30-40	40-50
frequency	3	?	20	12	?

Unit-II

14-

Find the coefficient of correlation for the following data:

x	55	56	57	58	59	60	62
y	57	58	55	62	62	59	61

15-

Obtain the equations of the lines of regression for the following data.

x	1.5	1.7	2.6	2.9	3.4
y	33.5	36.5	40.1	45.8	53.5

16-

Explain the methods of interpolation.

Unit-III

17-

A factory manufactures three products A,B and C. The following table shows the required processing time (in minutes) on machines X and Y for each product.

The Profit from A,B and C are Rs. 60/-, Rs. 80/- and Rs. 40/- respectively. machines X and Y have 40 and 50 working hours respectively. Factory must manufacture 200 A's, 400 B's and 100 C's but not

Machine	A	B	C
X	8	6	5
Y	4	7	3

more than 300 A's daily.

18-

Find the value of n for the matrix

$$A = \begin{bmatrix} 2 & -1 & 3 \\ -1 & 2 & 1 \\ 3 & 1 & 4 \end{bmatrix}$$

$$\text{Given } A^2 - 4A - nI_3 = 0$$

19-

For what value of λ and μ , a unique solution of following system of equations exists.

$$x + y + z = 6$$

$$x + 2y + 3z = 10$$

$$x + 2y + \lambda z = \mu$$

20-

Find the inverse of the matrix.

$$A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$$

$$\begin{pmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{pmatrix}$$