

MAM II SEMESTER – BUSINESS STATISTICS – QUESTION BANK

UNIT I: Introduction

1. Distinguish between classification and tabulation? What are the advantages of classification?
2. Define Statistics? Discuss scope of Statistics
3. Discuss nature and scope of Statistics
4. What are different diagrammatic presentations of data? Explain with suitable examples
5. Draw a component bar diagram for the following data which represents the number of branches of a nationalized bank.

Branch	1990	1991	1992	1993	1994
Rural	50	125	200	225	240
Urban	75	100	110	125	130
Semi – urban	50	52	55	75	80
Semi-rural	75	80	90	100	120

6. Out of a sample of 300 companies, the inventory to sales ratio expressed as percentage is given below. Construct a Frequency histogram, frequency polygon and frequency curve.

inventory to sales ratio	Number of companies
0-5	6
5-10	14
10-15	20
15-20	30
20-25	60
25-30	90
30-35	80

7. What are different graphical presentations of data?
8. What are different types of data? Explain with examples
(Hint: Explain about qualitative data, quantitative data, secondary data, and primary data.
Refer to Unit I notes on the college website under Business Statistics)

Short Notes(Unit I):

1. Cartogram
2. Pictogram
3. Data array
4. Secondary data
5. Stem and leaf display
6. Tabulation
7. Classification
8. Primary data

UNIT II: Measures of Central tendency and Dispersion, Skewness & Kurtosis

1. What are the measures of central tendency? Explain in brief.
(Hint: you should write about Mean, Median, Mode, Geometric mean and Harmonic mean with examples)
2. What are measures of dispersion? Explain them in brief
(Hint: Write definitions of Range, Quartile deviation, Mean deviation and standard deviation with examples)
3. What are Skewness and Kurtosis?
(Write definition of Skewness, types of skewness – positive and negative, and kurtosis, types of kurtosis – Meso kurtic, leptokurtic and platykurtic. Refer notes on Skewness and Kurtosis)
4. What are relative measures of Dispersion?
(Hint: write about Coefficient of dispersion based on range, quartile deviation, mean deviation and standard deviation – coefficient of dispersion. Refer notes on measures of Dispersion)
5. Prepare for problems on Mean, Median, Mode and Standard deviation
6. Find the Mean, Median, Mode for the following data

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	10	15	25	25	10	10	5

7. Find Standard deviation for the following data:

Class Interval	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	5	7	10	8	6	4

Short Notes (unit II):

1. Mean
2. Median
3. Mode
4. Standard deviation
5. Mean deviation
6. Quartile deviation
7. Range
8. Relationship between mean, median and mode
9. Coefficient of dispersion
10. Skewness
11. Kurtosis
12. Relationship between arithmetic mean, Geometric mean and Harmonic mean
13. Grouped and ungrouped data
14. Partition values
15. Quartiles, deciles and percentiles

Unit III: Index Numbers

1. What are Index numbers? Briefly describe its applications in business
2. What are Index numbers? How are they constructed?
3. What are Price index and Quantity index numbers? Give some examples for each
4. What is Fisher's Index number? Why is it called ideal?
5. Explain time reversal test and factor reversals test with the help of a suitable example.
6. Distinguish clearly between fixed base and chain base index numbers?
7. What is consumer price index? How is it constructed?
8. Find Fisher's index number for the following

Commodity	Base year (2000)		Current year (2005)	
	Price	Quantity	Price	Quantity
A	5	4	8	15
B	15	10	18	12
C	12	15	15	8
D	18	6	20	10

9. Show that Fisher's index number satisfies time reversal test and factor reversal test

Commodity	Base year (2000)		Current year (2005)	
	Price	Quantity	Price	Quantity
A	5	4	8	15
B	15	10	18	12
C	12	15	15	8
D	18	6	20	10

Short Notes (Unit III):

1. Price index number
2. Quantity index number
3. Value index number
4. Fixed base index number
5. Chain base index number
6. Splicing
7. Consumer price index number
8. Time reversal test
9. Factor reversal test
10. Circular test

Unit IV: (Sampling and Probability)

1. What is sampling? What are its advantages?
2. Compare Complete enumeration (census) and sample survey
3. Explain few probability (random) sampling methods
4. Explain few non-probability (non-random) sampling methods
5. Define probability? State addition and multiplication theorems of probability.
6. Simple problems on probability
7. A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that only one of them will be selected?
8. A university has to select an examiner from a list of 50 persons. 20 of them are women and 30 are men; 10 of them knowing Hindi and 40 not; 15 of them being teachers and the remaining 35 not. What is the probability of the university selecting a Hindi-knowing women teacher?
1. A and B played 12 games of class of which 6 games are won by A, 4 games are won by B and 2 games end in tie. They all agree to play a tournament consisting of 3 games. Find the probability that
 - (I) A wins all the games
 - (II) Two games end in tie
 - (III) A and B win alternately
 - (IV) B wins at least one game

Short Notes (Unit IV):

1. Sample
2. Population
3. Statistic and parameter
4. Sampling distribution
5. Standard error
6. Probability
7. Joint probability
8. Marginal probability
9. Conditional probability
10. Random experiment
11. Sample space
12. Addition theorem
13. Mutually exclusive events
14. Equally likely events
15. Independent events
16. Multiplication theorem
17. Union of two sets
18. Intersection of two sets

19. Venn diagram

Unit V: Correlation, Regression and Time Series

1. What is correlation? What are its types?
2. What do you mean by regression? State two regression lines.
3. What is rank correlation? When do we use it?
4. What are properties of regression coefficients?
5. What is time series? What are its components?
6. What are the models of time series?
7. What are different methods of measuring trend? Explain briefly
8. Explain the method of moving averages with a suitable example
9. Find Karl Pearson's coefficient of correlation to the following:

X	48	39	65	80	73	60	52	120
Y	10	50	120	225	90	60	55	25

10. Find both regression lines to the following. Estimate the coefficient of correlation and comment.

X	13	48	88	42	22	10	6
Y	8	52	82	84	22	10	6

11. From the following data calculate the rank correlation coefficient:

X	48	33	40	9	16	65	24	16	57	16
Y	13	13	24	6	15	20	9	6	19	4

12. Fit a Trend line $Y = a + bt$

Year(t)	2008	2009	2010	2011	2012	2013	2014
Profits (Y) (Rs. '000)	120	100	122	195	214	219	225

Short notes (Unit V):

1. Scatter diagram
2. Types of correlation
3. Rank correlation coefficient
4. Regression lines
5. Time series
6. Components of time series
7. Models of time series
8. Least squares method
9. Semi averages method
10. Moving averages method

