

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science & Commerce, Baramati
[Autonomous]
Department of BBA

Question Bank: - Business Statistics [Code: BBA1205]

1. State whether the following statements are true or false [1 Mark question]

1. Statistics can be defined as the science of collection, presentation, analysis and interpretation of data.
2. Sampling means representative item selecting from the population.
3. SRS mean Straight Random Sampling.
4. The unprocessed data in terms of individual observation are called as raw data.
5. Simple Bar diagram is one of the types of Diagrams.
6. $A. M. = \frac{\text{Sum of observations}}{\text{Number of observations}}$
7. Median is the value of end observation, in data when the observations are arranged in increasing/ (descending) order.
8. Range is the difference between smallest and largest value.
9. Quartile Deviation = $\frac{Q4 - Q1}{2}$
10. Relative measure of standard deviation called coefficient of valuation.
11. Positive, Negative & No- Correlation is the types of Correlation.
12. The extent of linear relation between the two variables is called as correlation.
13. Interrelated variables are called as correlated variables.
14. Time series is a series of mathematics observations arranged in chronological order.
15. Seasonal variations are the fluctuations in a time series which repeat regularly every year or some specific period of time.
16. Cyclical variation in a time series is the fluctuations which repeat over a time period of more than one year.
17. Time series analysis mean study of period series.
18. Link Relative of Quarter = $\frac{\text{Value of Current Quarter}}{\text{Value of previous Quarter}} \times 100$
19. Index number is tool used to measure changes in Price.
20. Statistics is applicable only in Management Science.

2. Answer in one sentence [1/2 Marks Questions]

1. What do you mean by Statistics?
2. List the methods of Sampling.
3. List the types of Graphs.
4. What do you mean by Pie Bar?
5. What is the meaning of sampling?
6. What do you mean by Arithmetic mean?
7. Explain the concept mode in one sentence.
8. What do you mean by Range?
9. Define Standard deviation in one sentence.
10. List the types of correlation.
11. What is the Median?
12. Explain computational procedure of correlation coefficient.
13. What do you mean by Regression line of Y on X?
14. Write the formula of Standard Deviation.
15. List the methods of measurement of Trend.
16. What do you mean by Time series analysis?
17. What is the meaning of seasonal variation?
18. What do you mean by Secular Trend?
19. Define graphical method in one sentence.
20. List the types of Index numbers.
21. What is the meaning of Index Numbers?

3. Short Answer Questions. [4 Marks]

1. Scope of Statistics.
2. Types of Sampling.
3. Objectives of Classification.
4. Difference between census method and sampling method.
5. Characteristics of Index Numbers.
6. Write a note on Types of Correlation with examples.
7. Properties of regression coefficient.
8. Limitations of Statistics.
9. Problems in the construction Index Numbers.

10. Merits and Demerits of Median.
11. Difference between absolute & relative measure of dispersion.
12. Uses of Index numbers.
13. Seasonal & Cyclical variation of time series.
14. Criteria for good measures of central tendency.
15. Types of Diagrams.

4. Long Answer questions [4/6 Marks questions]

1. For the following frequency distribution find i) less than cumulative frequencies and ii) more than cumulative frequencies.

Marks	0-10	10-20	20-30	30-40	40-50
Frequency	5	12	15	4	4

2. Draw a histogram to represent the following frequency distribution.

Size of the farm in hectares	1-20	21-40	41-60	61-80	81-100	101-120
No. of farms	12	38	16	5	3	1

3. Draw less than cumulative frequency curve and more than cumulative frequency curve for the following frequency distribution.

Marks	0-10	10-20	20-30	30-40	40-50
Frequency	5	12	43	32	8

4. Represent the following information by pie diagram.

Items	Food	House Rent	Clothing	Education	Saving	Misc.
Expenditure	300	200	125	110	90	75

5. Draw a multiple bar diagram to represent the following data.

Profit of company [Rs. in lakhs]	Year				
	2012	2013	2014	2015	2016
Company A	200	250	400	600	570
Company B	250	260	350	610	590
Company C	300	315	415	390	400

6. From the following data find the missing frequencies, it is given that mean is 15.3818 and total frequency is 55.

Class	9-11	11-13	13-15	15-17	17-19	19-21
Frequency	3	7	-	20	-	5

7. The Arithmetic Mean of 50 observations is 120. Find the Arithmetic Mean if each observation is:

- i) Increased by 10
- ii) Decreased by 5
- iii) Doubled
- iv) Doubled and Increased by 5

8. Find the mean, mode, median for following data.

X	5	6	7	8	9	10	11	12
Frequency	8	10	9	6	5	4	4	1

9. The following data relates to age distribution of 50 persons:

Age [Years]	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	3	7	14	16	8	2

Find mode of above distribution.

10. Determine arithmetic mean, mode and median of marks from the data given below:

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	1	3	10	4	2

11. The number of runs scored by cricketers A and B in 5 test matches are shown below:

A	5	20	90	76	102	90	6	108	20	16
B	40	35	60	62	58	76	42	30	30	20

Find i) which cricketer is better in average? ii) Which cricketer is more consistent?

12. For a set of 90 items the mean and standard deviation are 59 and 9 respectively. For 40 items selected from those 90 items then mean and standard deviation are 54 and 6 respectively. Find the mean and standard deviation of the remaining items.

13. Given that: $n=10$, $\sum(x-20) = 8$, $\sum(x-20)^2=762$. Find mean and S. D.

14. Compute standard deviation if the following frequency distribution:

Weight (Kg)	30-40	40-50	50-60	60-70	70-80
No. of standards	3	5	12	20	10

15. The following data represents the goals scored by two teams in foot ball matches.

Number of goals scored	0	1	2	3	4
No. of matches by team A	20	12	8	3	2
No. of matches by team B	18	10	7	6	4

Which team scores more goal in average? Which team is more consistent?

16. Two workers on the same job show the following results over long period of time:

	Workers 'A'	Workers 'B'
Mean time of completing the job (in minutes)	30	25
Standard deviation	6	4

- i) Which worker appears to be more consistent in the time he requires to complete the job? Why?
- ii) Which worker is faster in completing the job? Why?

17. The table below gives the respective heights x and y of a sample of 10 fathers and their sons:

- i) Find regression line y on x .
- ii) Find regression line x on y .
- iii) Estimate son's height if father's height is 65 inches.
- iv) Estimate father's height if son's height is 60 inches.
- v) Compute correlation coefficient between x and y .

Height of father x (inches)	65	63	67	64	68	62	70	66	68	67
Height of son y (inches)	68	66	68	65	69	66	68	65	71	67

18. Revenue department is trying to estimate the monthly amount of unpaid taxes.

Suppose x denote field audit labor and y denote unpaid taxes. Using last 10 months data the following summary is obtained.

$$\sum x = 441, \sum y = 272, \sum x^2 = 19461, \sum y^2 = 7428, \sum xy = 12,005.$$

Determine regression line of y on x . Also obtain standard error of regression estimate.

19. Compute regression coefficient and hence verify that correlation coefficient lies between them.

$$N = 100, \bar{x} = 60, \bar{y} = 50, \sigma_x = 10, \sigma_y = 12, \sum (x - \bar{x})(y - \bar{y}) = 8400.$$

20. The correlation coefficient between two variables X and Y is 0.6. If the means of two variables are 13 and 27 respectively and standard deviations are 1.5 and 2 respectively, find the regression line of Y on X .

21. The following data give the sales (in thousands) of a company for the years 1985 – 1994.

Year (t)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Sales (y)	50	82	65	86	70	52	90	65	87	43

Calculate:

- i) 3 yearly moving averages.
- ii) 5 yearly moving averages.

- iii) Plot the original time series along with the 3 yearly and 5 yearly moving average.

22. Following data relate to the average retail price Rs. per kg of ground nut during four quarters of 5 years 1998-2002.

Year	Quarters			
	I	II	III	IV
1998	40	35	38	40
1999	42	37	39	38
2000	41	35	38	42
2001	45	36	36	41
2002	44	38	38	42

Obtain 4 point moving average.

23. Fit a trend line to the following time series by the least square method.

Year (t)	1998	1999	2000	2001	2002
Production (y) : (in lakh tones)	12	20	28	32	50

Obtain the trend value of production for 2005 and 2007.

24. The total sales of a company is expected to be Rs. 60 lakhs during the year, find expected sales in each month given the monthly indices if sales as follows:

Month	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Seasonal Index	110	105	102	101	99	97	92	90	95	100	101	108

25. The data given below give average quarterly prices of a certain type of wheat for different years. Compute seasonal indices by the link relative method for these data:

Year \ Quarter	I	II	III	IV
1997	15.0	13.0	11.0	15.5
1998	17.5	14.0	11.0	18.0

1999	15.5	14.5	14.0	16.0
2000	15.5	15.5	12.5	17.5
2001	17.0	18.0	13.0	16.5

26. Compute price index for 2007 with 2006 as base year using simple aggregate method, for the data given below:

Commodities	A	B	C	D	E
Price in 2006	40	60	20	50	80
Price in 2007	50	60	30	64	104

27. Calculate price index numbers for the following data for the year 2007 taking 2006 as base year using the following formulae.

i) Laspeyere's ii) Paasche's iii) Fisher's.

28. Calculate the cost of living index number from following data:

Group	Index Number	Weight
Food	350	50
Fuel and lighting	200	10
Clothing	240	10
House Rent	160	10
Miscellaneous	250	20

29. Cost of living number of the following data is known to be 126.2, obtain the missing weight.

Commodities	A	B	C	D	E
Index Number	130	120	125	115	120
Weight	60	20	-	6	4

30. Represent the following data using simple bar diagram:

Year	1981	1982	1983	1984	1985
Production (in tones)	45	40	50	52	47