

Business Statistics HV
Practice Questions
Index Numbers and Time Series

1. Explain various tests of adequacy of Index numbers. Why is Fisher's Index known as an ideal index number.
2. Calculate the cost of living index number for the year 2010 on the basis of 2005 from the following data where a consumer basket consists of 6 commodity groups. If a person was earning Rs 50,000 per month in 2005 what should have been his salary in 2010

Commodity groups	Weights	Prices in 2005 (Rs per unit)	Prices in 2010 (Rs per unit)
A	40	16	20
B	25	40	48
C	5	0.5	0.5
D	20	88	100
E	10	65	80

3. Write a short note explaining BSE SENSEX and NSE NIFTY index numbers.
4. From the following two different index number series, construct a new series of Index number with base year as 2008

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
I.N (base year 2000)	100	112	120	122	125	140					
I.N. (base year 2005)						100	120	130	135	140	140

5. For the following data calculate Quantity Index number using (i) Fisher's method and (ii) Marshall Edgeworth method.

Commodity	Quantity Base year Kg	Price base Year Rs	Expenditure Current year	Quantity Current year
A	40	25	2000	50
B	18	22	1200	30

C	16	54	1320	44
D	40	20	1350	45
E	30	18	630	15

Answer (i) 136.85 (ii) 134.94

6. A Company made spent 50, 48, 18 and 42 Rs lakh on 4 items in 2012. In the year 2013 the expenditures increased to 100, 98, 60 and 102 Rs lakh on these items respectively. If the units purchased of each item is same in both years respectively, compute the price index of the current year using appropriate method.

What method would you prefer if the quantities are 4 items are given as 5, 2, 6 and 17 respectively?

Answer : 227.85

7. Fit a linear trend for the following data on annual steel production (in million tons) in a state.

Year	Production
1995	23
1996	25
1997	50
1998	45
1999	60
2000	75
2001	84
2002	100

8. Calculate the four seasonal indices for rain fall (in mm) in Karnataka using simple average method

	Rainfall in mm			
Year	Season I	Season II	Season III	Season IV
2005	118	260	379	20
2006	85	185	405	25
2007	95	190	401	22
2008	120	200	400	22

2009	122	220	395	18
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9. Assuming a parabolic trend calculate trend values for data on number of girls enrolled in primary schools in a state . ON the basis of your result estimate the number of girls enrolled in 1995

Year	No of girls enrolled
1990	700
1991	1425
1992	3000
1993	6900
1994	10000

10. Using method of link relatives calculate seasonal index for data on number of books sold in a store:

Year	Qtr I	Qtr II	Qtr III	Qtr IV
2010	400	440	100	80
2011	450	495	100	88
2012	500	550	120	100

11. Given below is the monthly trend equation for Sales (in Rs. thousand) of a commodity
 $Y = 250 + 1.6x$
 origin: 1.9.2010 , x unit : 1 month , Y is monthly sales (in Rs. thousand).
 Convert the above equation into annual trend equation and estimate sales for the calendar year 2018.

12. Calculate linear trend values for the following data on no of average monthly salary of salesmen in a company. On the basis of trend values estimate the average salary in 2001?

Year	Salary in Rs '000
1995	35
1996	40
1997	45

1998	52
1999	55
2000	60

Decision Making

13. A farmer wants to decide which of the three crops he should plant on his 100 acre farm. The profit from each crop depends on the rainfall in the growing season. He has categorized the amount of rainfall as high medium and low. His estimated profit is shown in table below:

Rainfall	Crop A	Crop B	Crop C
High	10,000	4000	7500
Medium	6000	5000	5000
Low	4000	5200	4000

If he wishes to plant only one crop, which one will he chose using (i) maximax criterion (ii) maximin criterion.

14. A shopkeeper has to choose between the acts of selling cold drinks and selling coffee. His payoff table is given below.

	Payoff (in Rs.)	
Act	Cold Weather	Hot weather
Selling Cold drinks	50	100
Selling coffee	120	40

Given the probability of hot weather being hot is 0.8, set up an Opportunity Loss table. Select the best act after computing opportunity loss of each action.

