



Part A: Statistics for Economics

Chapter 7 : Index Numbers

Q. NO	QUESTION	MARKS
1	Which Index number is known as cost of living index?	1
2	Give Panache's formula for weighted index number.	1
3	Which sign is used to indicate the price index number?	1
4	Write the formula to calculate the rate of inflation?	1
5	Mention the weight of primary articles in wholesale price index.	1
6	In how many groups all the commodities are classified for Wholesale Price Index?	1
7	Which Index number is generally used to measure inflation?	1
8	Which change is measured Consumer Price Index?	1
9	In which Index Number there is a relative importance of the items?	1
10	Which items having the highest weight in CPI for industrial worker?	1
11	<p>The value of money does not remain constant over time. It rises or falls and is inversely related to change in the price level. A rise in the price level means a fall in the value of money and a fall in the price level means a rise in the value of money. Thus, changes in the value of money are reflected by the changes in the general level of prices over a period of time. Changes in the general level of prices can be measured by a statistical device known as 'Index Number'.</p> <p>----- is a statistical device used to measure relative changes in a large number of items.</p>	1
12	<p>Read the following statements-Assertion (A) and Reason (R). Choose one of the correct alternatives given below:</p> <p>Assertion (A): index numbers offer a precise measurement of the quantitative change in the concerned variable(s) over time.</p> <p>Reason(R): a price relative is a percentage ratio between price of a commodity in the current year and that in the base year.</p> <p>Alternatives:</p> <p>(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)</p> <p>(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).</p> <p>(c) Assertion (A) is true but Reason (R) is false.</p> <p>(d) Assertion (A) is false but Reason (R) is true.</p>	1
13	<p>Whose formula is considered ideal for the construction of index number?</p> <p>(a) Paasche's (b) Laspeyer's formula</p> <p>(c) fisher's formula (d) none of these.</p>	1

14	<p>Read the following statements carefully:</p> <p>Statement 1: While constructing index number, weights are accorded to different commodities according to their relative significance.</p> <p>Statement 2: Index numbers help to ascertain the living standards of the people.</p> <p>In the light of the given statements, choose the correct alternative from the following:</p> <p>(a) Statement 1 is false and statement 2 is true. (b) Statement 1 is true and statement 2 is false.</p>	1
	<p>(c) Both statements 1 and 2 are false. (d) Both statements 1 and 2 are true.</p>	
15	<p>Index number for the base year is always considered as _____.</p> <p>(a) 100 (b) 1000 (c) 1 (d) 0</p>	1
16	<p>In India, three Consumer Price Index Numbers (CPI's) are constructed: (i) CPI for Industrial Workers (ii) CPI for agricultural labourers (iii) CPI for urban non-manual employees. (True/ False)</p>	1
17	<p>Read the following statements-Assertion (A) and Reason (R). Choose one of the correct alternatives given below:</p> <p>Assertion (A): index numbers act as economic barometers. Reason(R): index numbers are used in planning and formulating various government and business policies.</p> <p>Alternatives:</p> <p>(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A) (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.</p>	1
18	<p>Index number is a technique of measuring changes in a variable or group of variables with respect to time, geographical location or other characteristics. Conventionally, index numbers are expressed in terms of percentages to show the extent of relative change. Of the two periods, the period with which the comparison is to be made, is known as the base period. Price index numbers measure and permit comparison of the prices of certain goods. Quantity index numbers measure the changes in the physical volume of production, construction or employment.</p> <p>Price index numbers are used to :</p> <p>(a) Measure prices (b) Measure and compare prices</p> <p>(c) Compare prices (d) None of these.</p>	1
19	<p>In general, inflation is calculated by using:</p> <p>(a) Wholesale Price Index. (b) Consumer Price Index. (c) Producer's Price Index. None of these.</p>	1

20	<p>Which of the following are limitations of using index numbers?</p> <p>(a) The use of each index number is restricted to a specific object. (b) It ignores the quality of commodities. (c) It is useful only for short term comparison. All of the above.</p>	1
21	<p>If the index of prices is estimated to be 112 in 2022, it means that in comparison to the base year, prices in 2022 are higher by :</p> <p>a) 12% b) 24%</p>	1
	<p>c) 112% None of these</p>	
22	<p>Read the following statements and choose the correct alternative:</p> <p>Assertion (A): The changes in consumption over a period of time can be studied with the help of index number. Reason (R): An index number is a statistical device for measuring changes in the magnitude of a group of unrelated variables.</p> <p>a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A). c) Assertion (A) is true but Reason (R) is False d) Assertion (A) is False but Reason (R) is true.</p>	1
23	<p>Price of top 30 shares of Bombay Stock Exchange increased, which of these will increase?</p> <p>a) WPI b) CPI c) Inflation rate d) Sensex</p>	1
24	<p>A consumer price index measures changes in:</p> <p>a) retail prices b) wholesale prices c) producers prices d) None of these</p>	1
25	<p>In _____, product of quantities and price of base year is taken as weight.</p> <p>a) Laspeyre's Method b) Paasche's Method c) Family Budget Method d) Aggregative Expenditure Method</p>	1

26	<p>Rate of inflation is equal to :</p> <p>a) $\frac{A_1}{A_2+A_1} \times 100$</p> <p>b) $\frac{A_2+A_1}{A_1} \times 100$</p> <p>c) $\frac{A_1}{A_2-A_1} \times 100$</p> <p>d) $\frac{A_2-A_1}{A_1} \times 100$</p>	1
27	<p>In general, inflation is calculated by using:</p> <p>a) wholesale price index</p> <p>b) consumer price index</p> <p>c) producers price index</p> <p>d) index of industrial of production</p>	1
28	<p>Index number is studied:</p>	1
	<p>a) at a point of time</p> <p>b) over a period of time.</p> <p>c) Both (i) and (ii)</p> <p>d) None of the above.</p>	
29	<p>_____ period is also called reference period in index number</p> <p>a) Current</p> <p>b) Base</p> <p>c) Both (i) and (ii)</p> <p>d) None of the above</p>	1
30	<p>Read the following statements carefully :</p> <p>Statement 1: The difference between base year and current year should be very large.</p> <p>Statement 2: The base period should be free from all sorts of abnormalities like wars, floods, earthquakes, labour strikes, etc.</p> <p>In the light of the given statements, choose the correct alternative from the following:</p> <p>a) Statement 1 is true and Statement 2 is false.</p> <p>b) Statement 1 is false and Statement 2 is true.</p> <p>c) Both Statements 1 and 2 are true.</p> <p>Both Statements 1 and 2 are false</p>	1
31	<p>A composite price index where the prices of the items in the composite are weighted by their relative importance is known as the;</p> <p>a. Weighted aggregate price index</p> <p>b. price relative</p> <p>c. CPI</p> <p>None of the above</p>	1

32	<p>A weighted aggregate price index where the weight for each item is its current-period quantity is called the;</p> <ol style="list-style-type: none"> Aggregate index Consumer Price Index Laspeyres Index Paasche Index 	1																	
33	<p>If the wholesale price index for week 1 is 200 and for week 2 is 250 then rate of inflation;</p> <ol style="list-style-type: none"> 30 25 15 50 	1																	
34	<p>Calculate index numbers from the following data by simple aggregate method taking prices of 2011 as base.</p>	1																	
	<ol style="list-style-type: none"> 110 135 120 150 																		
35	<p>Read the following statements-Assertion (A) and Reason (R). Choose one of the correct alternatives given below:</p> <p>Assertion (A): Fisher's method is an ideal method for constructing index numbers.</p> <p>Reason (R): Fisher's method takes into consideration the price and quantities of both the base year and current year.</p> <p>Alternatives:</p> <ol style="list-style-type: none"> Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A) Assertion (A) is true but Reason (R) is false Assertion (A) is false but Reason (R) is true 	1																	
36	<p>Taking 2011 as base year calculate index number of the year 2012;</p> <table border="1" data-bbox="461 1675 1304 1864"> <thead> <tr> <th colspan="2">Commodity</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Price per unit (in Rupees)</td> <td>2011</td> <td>80</td> <td>50</td> <td>90</td> <td>30</td> </tr> <tr> <td>2012</td> <td>95</td> <td>60</td> <td>100</td> <td>45</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 115.5 125.5 115.0 125.0 	Commodity		A	B	C	D	Price per unit (in Rupees)	2011	80	50	90	30	2012	95	60	100	45	1
Commodity		A	B	C	D														
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37	<p>Which of the following are the problems faced in the construction of index numbers?</p> <ul style="list-style-type: none"> a. Measurement of change in the price level b. Selection of formula c. Knowledge of the change in the standard of living <p>Information regarding production</p>	1																		
38	<p>Read the following statements given below and choose the correct alternative.</p> <p>Statement 1- The choice of method for the construction of an index number entirely depends upon the object with which a particular index number is constructed</p> <p>Statement 2- Fisher's method is considered an ideal method to construct index numbers.</p> <ul style="list-style-type: none"> a. Both are correct b. Both are incorrect c. Statement 1 is correct and statement 2 is incorrect <p>Statement 1 is incorrect and statement 2 is correct</p>	1																		
39	<p>Read the following statements given below and choose the correct alternative.</p> <p>Statement 1- Fisher's method is based on exact weights.</p> <p>Statement 2- Fisher's method takes into consideration the price and quantity</p>	1																		
	<table border="1" data-bbox="337 909 1071 987"> <thead> <tr> <th>Year</th> <th>2011</th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016</th> </tr> </thead> <tbody> <tr> <td>Price</td> <td>40</td> <td>50</td> <td>60</td> <td>70</td> <td>90</td> <td>100</td> </tr> </tbody> </table> <ul style="list-style-type: none"> b. Both are incorrect c. Statement 1 is correct and statement 2 is incorrect <p>Statement 1 is incorrect and statement 2 is correct</p>	Year	2011	2012	2013	2014	2015	2016	Price	40	50	60	70	90	100					
Year	2011	2012	2013	2014	2015	2016														
Price	40	50	60	70	90	100														
40	<p>Which one of the following is not a component of "Human Development Index"?</p> <ul style="list-style-type: none"> a. literacy rate b. Infant mortality rate c. per capita income d. Life expectancy 	1																		
41	<p>From the following data.....</p> <table border="1" data-bbox="402 1392 1117 1686"> <thead> <tr> <th>commodities</th> <th>Base year 2011 Price Rs.</th> <th>Current year 2016 Price Rs.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12</td> <td>20</td> </tr> <tr> <td>B</td> <td>4</td> <td>4</td> </tr> <tr> <td>C</td> <td>8</td> <td>12</td> </tr> <tr> <td>D</td> <td>22</td> <td>24</td> </tr> <tr> <td>E</td> <td>16</td> <td>24</td> </tr> </tbody> </table> <p>Ques. The price index number for the year 2016 is;</p> <ul style="list-style-type: none"> a. 140 b. 136 c. 142 d. 130 <p>Correct answer is option 'B'. Can you explain this answer?</p>	commodities	Base year 2011 Price Rs.	Current year 2016 Price Rs.	A	12	20	B	4	4	C	8	12	D	22	24	E	16	24	3
commodities	Base year 2011 Price Rs.	Current year 2016 Price Rs.																		
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42	“Is it essential to have different CPI for different categories of consumers” Clarify the reason behind in calculation.	3																		
43	From the data given below, construct the index number for the year 2023 on the base of 2011 by simple aggregative method: <table border="1" style="margin-left: 20px;"> <tr> <td>Items</td> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> </tr> <tr> <td>2011 Price (In rupees)</td> <td>30</td> <td>65</td> <td>70</td> <td>50</td> <td>25</td> </tr> <tr> <td>2023 price (In rupees)</td> <td>40</td> <td>45</td> <td>55</td> <td>60</td> <td>65</td> </tr> </table>	Items	A	B	C	D	E	2011 Price (In rupees)	30	65	70	50	25	2023 price (In rupees)	40	45	55	60	65	3
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44	In India, three Consumer Price Index Numbers (CPI's) are constructed: (i) CPI for Industrial Workers (ii) CPI for agricultural labourers (iii) CPI for urban non-manual employees. They are routinely calculated every month to analyse the impact of changes in the retail price in the cost of living of these three broad categories of consumers. It is essential to have different CPI for different categories of consumers because the consumption pattern of different categories varies widely. Also, the consumption habits of the people of the same class differ from place to place. CPI helps us in determining the effect of rise and fall in prices on different classes of consumers living in different areas. Why is it essential to have different CPI for different categories of consumers?	3																		
45	The literature revealed that two basic methods of constructing wealth indices are employed: an un weighted method, where assets are weighted equally; and a weighted method, where specific weights are assigned to assets. In the case of using the weighted method, weighting can be assigned using various techniques. On the basis of above information, What is the difference between un weighted and weighted index numbers?	3																		
46	‘Manipulations are not possible in case of index number.’ Defend or refute.	3																		
47	State the qualities of a good base year.	3																		
48	What does an industrial production measure?	3																		
49	State the principal types of index numbers.	3																		
50	‘Simple Aggregative Method is not influenced by magnitude of the prices.’ Defend or refute.	3																		
51	Calculate real wages if present wages are ₹ 340 and current price index is 250.	3																		
52	Salary of Rahul was ₹ 10,000 in base year. Current year’s CPI is 225 and his salary is ₹ 21,000. Can he maintain same living standard as base year? Give reasons.	3																		
53	Calculate Simple Aggregative Price Index of 2022 with 2020 as a base year : <table border="1" style="margin-left: 20px;"> <tr> <td>Commodity</td> <td>Rice</td> <td>Wheat</td> <td>Oil</td> <td>Pulses</td> <td>Sugar</td> </tr> <tr> <td>Price of 2020</td> <td>120</td> <td>80</td> <td>300</td> <td>130</td> <td>150</td> </tr> <tr> <td>Price of 2022</td> <td>180</td> <td>100</td> <td>400</td> <td>180</td> <td>200</td> </tr> </table>	Commodity	Rice	Wheat	Oil	Pulses	Sugar	Price of 2020	120	80	300	130	150	Price of 2022	180	100	400	180	200	4
Commodity	Rice	Wheat	Oil	Pulses	Sugar															
Price of 2020	120	80	300	130	150															
Price of 2022	180	100	400	180	200															
54	a) State any two difficulties in the construction of index number and State uses of any two different types of Index numbers.	4																		

55	Can the CPI number for urban non-manual employees represent the changes in the cost of living of the President of India?	4																								
56	If the salary of a person in the base year is 4,000 per annum and the current year salary is 6,000 by how much should his salary rise to maintain the same standard of living if the CPI is 400?	4																								
57	An enquiry into the budgets of the middle class families in a certain city gave the following information	4																								
	<table border="1" data-bbox="349 1003 1047 1333"> <thead> <tr> <th>Expenses On Items</th> <th>Food</th> <th>Fuel</th> <th>Clothing</th> <th>Rent</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>Weight(W)</td> <td>35%</td> <td>10%</td> <td>20%</td> <td>15%</td> <td>20%</td> </tr> <tr> <td>Price (in Rs) in 2004</td> <td>1,500</td> <td>250</td> <td>750</td> <td>300</td> <td>400</td> </tr> <tr> <td>Price (in Rs) in 1995</td> <td>1400</td> <td>200</td> <td>500</td> <td>200</td> <td>250</td> </tr> </tbody> </table> <p data-bbox="349 1438 1117 1470">What is the cost of living index of 2004 as compared with 1995?</p>	Expenses On Items	Food	Fuel	Clothing	Rent	Miscellaneous	Weight(W)	35%	10%	20%	15%	20%	Price (in Rs) in 2004	1,500	250	750	300	400	Price (in Rs) in 1995	1400	200	500	200	250	
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58	Record the daily expenditure quantities bought and prices paid per unit of the daily purchases of your family for two weeks. How has the price change affected your family?	4																								
59	Try to list the important items of consumption in your family.	4																								
60	"Index numbers are economic barometers". Explain...	4																								

61	<p>An enquiry into the budgets of the middle class families in a certain city gave the following information :</p> <table border="1" data-bbox="342 260 1166 548"> <thead> <tr> <th>Expenses on item</th> <th>Food</th> <th>Fuel</th> <th>Clothing</th> <th>Rent</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>Price (In rupees) in 2018</td> <td>35%</td> <td>10%</td> <td>25%</td> <td>10%</td> <td>20%</td> </tr> <tr> <td>Price (In rupees) in 2023</td> <td>2000</td> <td>300</td> <td>700</td> <td>1200</td> <td>500</td> </tr> <tr> <td>Price (In rupees) in 2023</td> <td>2400</td> <td>500</td> <td>900</td> <td>1800</td> <td>650</td> </tr> </tbody> </table> <p>2023 as compared with 2018?</p>	Expenses on item	Food	Fuel	Clothing	Rent	Miscellaneous	Price (In rupees) in 2018	35%	10%	25%	10%	20%	Price (In rupees) in 2023	2000	300	700	1200	500	Price (In rupees) in 2023	2400	500	900	1800	650	4																
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62	Define base year. What is it's importance?	4																																								
63	What is price relative method of constructing index number?	4																																								
64	What are the considerations underlying the choice of base period in the constructions of an index number?	4																																								
65	What is an index number? Point out it's utility and limitations.	6																																								
66	Explain the needs and problems of weighting the construction of index number.	6																																								
67	Discuss the general method of constructing an index number and uses of an index number.	6																																								
68	<p>Find the Consumer Price Index from the following data. Using (i) Aggregative Expenditure Method, and (ii) Family Budget Method. Is there any difference between the two results?</p> <table border="1" data-bbox="342 1010 1177 1619"> <thead> <tr> <th>Commodity</th> <th>Quantity Consumed</th> <th>Unit</th> <th>Price in 2004 (₹)</th> <th>Price in 2017 (₹)</th> </tr> </thead> <tbody> <tr> <td></td> <td>in the year 2004</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Rice</td> <td>6</td> <td>Quintal</td> <td>100</td> <td>120</td> </tr> <tr> <td>Wheat</td> <td>8</td> <td>Quintal</td> <td>80</td> <td>90</td> </tr> <tr> <td>Bajra</td> <td>1</td> <td>Quintal</td> <td>70</td> <td>70</td> </tr> <tr> <td>Arhar</td> <td>2</td> <td>Quintal</td> <td>120</td> <td>115</td> </tr> <tr> <td>Desi Ghee</td> <td>20</td> <td>kg</td> <td>12</td> <td>15</td> </tr> <tr> <td>Sugar</td> <td>1</td> <td>Quintal</td> <td>160</td> <td>170</td> </tr> </tbody> </table>	Commodity	Quantity Consumed	Unit	Price in 2004 (₹)	Price in 2017 (₹)		in the year 2004				Rice	6	Quintal	100	120	Wheat	8	Quintal	80	90	Bajra	1	Quintal	70	70	Arhar	2	Quintal	120	115	Desi Ghee	20	kg	12	15	Sugar	1	Quintal	160	170	6
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69	‘Certain difficulties have to be faced while constructing Consumer Price Index.’ Do you agree? If yes, state the difficulties.	6																																								
70	<p>Read the following table carefully and give your comment.</p> <p style="text-align: center;">Index Of Industrial Production Base 1993-94</p> <table border="1" data-bbox="342 1793 1062 1915"> <thead> <tr> <th>Industry</th> <th>Weight in %</th> <th>1996-97</th> <th>2003-04</th> </tr> </thead> <tbody> <tr> <td>General index</td> <td>100</td> <td>130.8</td> <td>189.0</td> </tr> </tbody> </table>	Industry	Weight in %	1996-97	2003-04	General index	100	130.8	189.0	6																																
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72	<p>a) 'Index number plays an important role in the well-functioning of an economy.' Do you agree with the above statement? Elucidate. b) Calculate CPI by Aggregate Expenditure Method.</p> <table border="1"> <thead> <tr> <th>Commodity</th> <th>Price (2018)</th> <th>Price (2022)</th> <th>Quantity (2018)</th> <th>Quantity (2022)</th> </tr> </thead> <tbody> <tr> <td>Rice</td> <td>10</td> <td>100</td> <td>10</td> <td>10</td> </tr> <tr> <td>Cashew</td> <td>50</td> <td>550</td> <td>30</td> <td>5</td> </tr> <tr> <td>Groundnut oil</td> <td>40</td> <td>250</td> <td>20</td> <td>20</td> </tr> <tr> <td>Egg</td> <td>20</td> <td>200</td> <td>40</td> <td>50</td> </tr> <tr> <td>Mustard oil</td> <td>30</td> <td>400</td> <td>50</td> <td>100</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Commodity	Price (2018)	Price (2022)	Quantity (2018)	Quantity (2022)	Rice	10	100	10	10	Cashew	50	550	30	5	Groundnut oil	40	250	20	20	Egg	20	200	40	50	Mustard oil	30	400	50	100																					6
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73	<p>Read the following text carefully and answer the following questions on the basis of the same :</p> <p>Index numbers are widely used in official statistics to convey information about the relative size of a variable between different points of time or between different geographical locations. Consumer price index and purchasing power parities are examples of the former and latter type of use respectively. A large number of index number formulae are available to the official statistician who wishes to select the most appropriate one for each application. There are alternative ways to compute an index at different periodicities or different levels of dissemination breakdowns, in other words to aggregate the index.</p> <p>a) What do you mean by index numbers? b) What is the formula for calculation of consumer price index? c) How is wholesale price index different from consumer price index? d) What is meant by Sensex?</p>	6																											
74	<p>Answer the following:</p> <p>A. Record the daily expenditure, quantities bought and prices paid per unit of the daily purchases, such as rice, Pulses, tomato, onion, and milk of Mr. Ram for two weeks. How has the price change affected Mr. Ram's family?</p> <p>The following table shows the list of items with quantities purchased by Mr. Ram's family:</p> <table border="1" data-bbox="391 1041 1179 1289"> <thead> <tr> <th>Items</th> <th>Quantities</th> <th>Price paid (week-1)</th> <th>Price paid (week-2)</th> </tr> </thead> <tbody> <tr> <td>Rice</td> <td>4kgs</td> <td>200</td> <td>210</td> </tr> <tr> <td>Pulses</td> <td>1kg</td> <td>100</td> <td>80</td> </tr> <tr> <td>Tomato</td> <td>2kgs</td> <td>120</td> <td>180</td> </tr> <tr> <td>Onion</td> <td>1kg</td> <td>40</td> <td>40</td> </tr> <tr> <td>Milk</td> <td>7 liters</td> <td>210</td> <td>210</td> </tr> </tbody> </table> <p>B. Name of the two methods of computing consumer price index (cost of living index) Number?</p>	Items	Quantities	Price paid (week-1)	Price paid (week-2)	Rice	4kgs	200	210	Pulses	1kg	100	80	Tomato	2kgs	120	180	Onion	1kg	40	40	Milk	7 liters	210	210	6			
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75	<p>18 are using;</p> <table border="1" data-bbox="337 1549 1198 1665"> <thead> <tr> <th rowspan="2">Commodities</th> <th rowspan="2">Unit</th> <th rowspan="2">Weight (Rs. '000)</th> <th colspan="2">Price (Rs.)</th> </tr> <tr> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Kg.</td> <td>5</td> <td>2.00</td> <td>4.50</td> </tr> <tr> <td>B</td> <td>Quintal</td> <td>7</td> <td>2.50</td> <td>3.20</td> </tr> <tr> <td>C</td> <td>Dozen</td> <td>6</td> <td>3.00</td> <td>4.50</td> </tr> <tr> <td>D</td> <td>Kg.</td> <td>2</td> <td>1.00</td> <td>1.80</td> </tr> </tbody> </table>	Commodities	Unit	Weight (Rs. '000)	Price (Rs.)		2017	2018	A	Kg.	5	2.00	4.50	B	Quintal	7	2.50	3.20	C	Dozen	6	3.00	4.50	D	Kg.	2	1.00	1.80	6
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76	<p>Calculate index numbers from the following data by;</p> <p>I. Laspeyre's method II. Paasche's method III. Fisher's method</p>	6																											

	Commodity	Base year		Current year	
		Price	Quantity	Price	Quantity
	Good-A	6	50	10	56
	Good-B	2	100	2	120
	Good-C	4	60	6	60
	Good-D	10	30	12	24
	Good-E	8	40	12	36

ANSWER

1	Consumer price index (CPI)
2	$P_{01} = \frac{\sum P_1 q_1}{\sum P_0 q_1} \times 100$
3	P_{01}
4	$\text{Rate of inflation} = \frac{A_2 - A_1}{A_1} \times 100$ <p>Here, A_1 = WPI for week first (1) A_2 = WPI for week second (2)</p>
5	22.02 % (or) 22%
6	Three
7	Wholesale price index number
8	Retail Price
9	<i>Weighted index number.</i>
10	<i>Food.</i>
11	Index number
12	(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).
13	(c) Fisher's formula.
14	(d) Both statements 1 and 2 are true.
15	100.
16	True
17	(b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).
18	(b) measure and compare prices
19	(a) Wholesale Price Index.

20	d. All of the above.		
21	a) 12%		
22	c) Assertion (A) is true but Reason (R) is False		
23	d) Sensex		
24	a) retail prices		
25	c) Family Budget Method		
26	d) $\frac{A_2 - A_1}{A_1} \times 100$		
27	a) wholesale price index		
28	b) over a period of time		
29	b) Base		
30	b) Statement 1 is false and Statement 2 is true		
31	weighted aggregate price index		
32	d. Paasche Index		
33	25		
34	120		
35	Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)		
36	125		
37	b. Selection of formula		
38	Both are correct		
39	d..Statement 1 is incorrect and statement 2 is correct		
40	Infant mortality mate		
41	<p>Yes, I can explain.....</p> <p>Solution :-</p> <p>Price Index = $\frac{\Sigma P(\text{Current year})}{\Sigma P(\text{Base year})} \times 100$</p> <p>= $(84/62) \times 100$</p> <p>= 135.483</p> <p>Therefore, the correct option is (b) 136</p>		
42	<p>The Consumer Price Index (CPI) in India is calculated for different categories as under</p> <ul style="list-style-type: none"> • CPI for industrial workers. • CPI for urban non-manual employees. • CPI for agricultural Labourers. <p>The reason behind calculation of three different CPIs is that the consumption pattern of the three groups (i.e., industrial workers, urban non-manual workers and agricultural Labourers) differs significantly from each other.</p>		
	<p>Therefore, to assess the impact of the price change on the cost of living of the three groups, component items included in the index need to be given different weights for each of the group. This necessitates the calculation of different CPI for different categories of consumers.</p>		
43	Items	2011 Price (P ₀)	2023 Price (P ₁)
	A	30	40
	B	65	45

C	70	55
D	50	60
E	25	65
	$\Sigma P_0 = 240$	$\Sigma P_1 = 265$

$$P_{01} = (\Sigma P_1 / \Sigma P_0) \times 100$$

or,

$$P_{01} = 265 / 240 \times 100$$

$$\Rightarrow P_{01} = 110.416$$

44	It is essential to have different CPI for different categories of consumers because the consumption pattern of different categories varies widely. Also, the consumption habits of the people of the same class differ from place to place. CPI helps us in determining the effect of rise and fall in prices on different classes of consumers living in different areas.
45	In weighted index, different items are given equal importance but in case of unweighted index, different weights are given to different items.
46	The given statement is refuted. Index numbers can be constructed in such a manner so that the desired result can be obtained. Such a manipulation can be done by choosing a particular base year, a particular base year, a particular group of commodities, a specific set of prices, etc.
47	The base year chosen must be a representative year and must not experience any abnormal incidents such as droughts, floods, earthquakes, a major economic downturn etc. It also must be a year which is reasonably proximate to the year for which the national accounts statistics are being calculated. A good base year should be one without wide fluctuations, not far from the period of study, neither very long nor very short and for which reliable data is available.
48	Industrial production refers to the output of industrial establishments and covers sectors such as mining, manufacturing, electricity, gas and steam and air-conditioning. This indicator is measured in an index based on a reference period that expresses change in the volume of production output. The industrial production index is a business cycle indicator which measures monthly changes in the price-adjusted output of industry.
49	(a) Measures Changes in Price Level and Standard of Living: Index number of prices is a method through which we can measure changes in the price level over time. (b) Regulation of Wage Rate: Salaries and wages and dearness allowances are revised by the government when price level changes. (c) Determination of Government Policies: Index numbers of prices serve as guide to government policies. The price stability objective of the government policy is based on index number. (d) Guide for Businessmen: Index numbers also serve as a guide to businessmen. Rising prices as indicated by index numbers may create an atmosphere of optimism.
50	The given statement is refuted. Simple Aggregative Method is influenced by magnitude of the prices. It means, higher the price of a commodity, greater is its influence on the index number. So, high priced commodities receive greater weightage than low priced commodities.
51	Real wages = $\frac{\text{Present wages}}{\text{Present Price index}} \times 100$ $= \frac{340}{250} \times 100$ $= ₹ 136$

52	When salary of Rahul was ₹ 10,000 in base year, current year's CPI is 225 and his salary is ₹ 21,000. It implies that the cost of living standard has risen by 125 % whereas his salary has increased by 110 %, therefore there is a gap of 15 %. So, he cannot maintain same living standard as the base year, as he has been <u>compensated by less than 15 %</u> .					
53	<p>a) Formula $= \frac{\sum p_1}{\sum p_0} \times 100$ 1 mark</p> <p>Calculation – $\sum P_1 = 1060$, $\sum P_0 = 780$ 2 marks</p> <p>Correct answer- $P_0 = 135.89$ 1 mark</p>					
54	<p>a) Selection of base year, number of commodities, prices, weights, formula. (Any two)</p> <p>b) Uses of index numbers (Any two types) :</p> <p>(i) CPI is helpful in wage negotiation, formulation of income policy, rent control and calculating the purchasing power of money.</p> <p>(ii) WPI is used to eliminate the effect of change in general price level on aggregates such as national income, capital formation, etc and thus measure the rate of inflation.</p> <p>Index of Industrial production gives a quantitative figure about the changes in production in the industrial sector.</p>					
55	<p>The CPI number for urban non-manual employees in India is constructed by assuming the year 1984-85 as base year which is routinely updated every month to analyse the impact of changes in the retail price on the cost of living of these broad categories of consumers.</p> <p>The Central Statistical Organisation publishes the CPI of number of urban non-manual employees. This is necessary because their typical consumption baskets contain many dissimilar items. The President of India is also a distinguished urban consumer. As a result, the CPI number for urban non-manual employees also represents the changes in the cost of living of the President of India.</p>					
56	<p>Base CPI = ₹ 100</p> <p>Current CPI = ₹400</p> <p>Base Year Salary = ₹ 4,000</p> <p>Current Year Salary = ₹ 6,000</p> <p>When Base CPI is ₹100, then the salary is = ₹ 4,000</p> <p>Current salary equivalent to base year salary = (Base year salary/100) × CPI of current year</p> <p>When Current CPI is ₹ 400, then the salary should be =4,000/100×400= ₹ 16,000</p> <p>Thus, his salary should be ₹16,000 to maintain his purchasing power. Therefore, in the current year his salary should increase by ₹ 16,000 – ₹ 6,000 = ₹ 10,000 so as to maintain the same level of living in the current year as that of the base year.</p>					
57	Items	Weight(W)	Price in 1995(P ₀)	Price In 2004 (P ₁)	R=P ₁ /P ₀ *100	WR
	Food	35	1400	1500	107.14	3,749.90
	Fuel	10	200	250	125	1,250
	Clothing	20	500	750	150	3,000
	Rent	15	200	300	150	2250
	Miscellaneous	20	250	400	160	3200
		$\Sigma W = 100$				$\Sigma WR = 13,449.9$

$CPI = \frac{\sum WR}{\sum W}$
 $= 134499/100$
 $= 134.49$.
 Cost of Living Index = 134.50
 Thus, the price rose by 34.50% during 1995 and 2004.

58 This is a practical exercise. Record the daily expenditure, quantities bought and prices paid per unit of the daily purchases of your family for two weeks and try to analyse if quantities purchased decrease with rise in price of the respective items and also note if the percentage change in quantity brought about by a percentage change in price differ for different types of items.

59 The following items consumption needs of our family.....

- i. Food
- ii. Clothing
- iii. Electricity
- iv. House rent
- v. Transportation
- vi. Entertainment and Recreation
- vii. Education

Miscellaneous expenses

60 Barometers are used to measure atmospheric pressure. In same the way, index numbers are used to measure the level of economic activities.

- i. Consumer price index number shows the impact of change in the price level in cost of living of specific class of consumer.
- ii. The index number of industrial production measures changes in the level of industrial production.

The index number of agricultural production measures changes in the level of industrial production.

61	Items	Price in 2018 (P ₀)	Price in 2023 (P ₁)	Price Relative $R = (P_1/P_0) * 100$	Weight (W)	Product price Relative and weights (R.W)
	Food	2000	2400	120	35	4200
	Fuel	300	500	166.67	10	1666.7
	Clothing	700	900	128.57	25	3214.25
	Rent	1200	1800	150	10	1500
	miscellaneous	500	650	130	20	2600
					$\sum W = 100$	$\sum RW = 13180.95$

$$\begin{aligned}
 \text{COST OF LIVING INDEX} &= \frac{\sum RW}{\sum W} \\
 &= \frac{13180.95}{100} \\
 &= 131.8095 \text{ OR } 131.81
 \end{aligned}$$

So, **COST OF LIVING INDEX=131.81**

62 The year of comparison, also known as the reference year, is the base year. It should have the following characteristics:
 (i) It should be a normal year, with no significant variations in the index-related parameters.

(ii) It should be a year for which accurate statistical data are available, enabling meaningful comparison of other years' performance to the base year.
 (iii) It should not be more than a year out from the study period. Relative change over time would be meaningless otherwise.
 (iv) It should not be excessively long or excessively short. It typically lasts no more than a year and no longer than a month.

63	<p>A price relative is the percentage difference between the current year's value and the base year's value. In other words, price relative is the percentage difference between the current year's price and the base year's price.</p> $POI = \frac{P_1}{P_0} \times 100$ <p>We can find out price index number of the current year by using the formula.</p> $POI = \frac{\sum (P_1 \cdot PO \cdot 100)}{N}$
64	<ol style="list-style-type: none"> 1. The base period should be a normal period. Abnormal periods like period of war or floods etc. should not be selected as a base year. 2. The base period should be neither too short nor too long. 3. It should not be the period for which actual data are not available. 4. It should not be too far back in the past. <p>It provides the rupee value for the number of goods and services produced in an economy after deducting the cost of inputs and raw materials that have gone into the production of those goods and services. It also gives sector-specific picture like what is the growth in an area, industry or sector of an economy.</p>
65	<p>An index is a number that represents how the average of commodity prices (wholesale or retail), wages, and other factors change over time.</p> <p>The principle importance of index numbers are:</p> <p>Measurement of Change in the Price Level or the Value of Money: The most important use of index numbers is that they are used to measure the value of money over time.</p> <p>Knowledge of the Change in Standard of Living: People's living standards can be determined using index numbers.</p> <p>Adjustments in Salaries and Allowances: The cost of living index is an useful tool for the government and private sector.</p> <p>Useful to Business Community: The business community will use price index numbers to help them prepare and make decisions.</p> <p>The Limitations of the Index numbers: There are no scientific methods for assigning weight to the various items in the index numbers. Personal bias often influences how different items are weighed. It is also difficult to construct Index Numbers that allow international comparisons due to variations in the unit of currency as well as differences in the composition of production (and consumption) across different countries of the world.</p>
66	<p>Weighted Index numbers are the index numbers that allocate different weights to different items in the series based on their relative importance. This is not the same as a simple price index in that it is not a simple average of prices for various goods and services. Instead, a weighted average of the value of different items will be used. If the price of rice is twice the price of cloth, the price of rice may be given a weight of '2' in the construction of the price index, while the price of cloth may be given a weight of '1'. Weighted index numbers, while difficult to construct, give a much more realistic view of change over time than simple index numbers.</p>

67 There are different ways of construction of index number which are further divided in 2 parts - Simple and weighted. simple are further divided into simple aggregative and simple relative. Similarly the weighted are classified into weighted aggregative and weighted average. Uses of index number-

1. In Cost of Living: Cost of living index numbers in the case of different groups of workers throw light on the rise or fall in the real income of workers. It is on the basis of the study of the cost of living index that money wages are determined and dearness and other allowances are granted to workers. The cost of living index is also the basis of wage negotiations and wage contracts.
2. In Analysing Markets for Goods and Services: Consumer price index numbers are used in analysing markets for particular kinds of goods and services. The weights assigned to different commodities like food, clothing, fuel, and lighting, house rent, etc., govern the market for such goods and services.

68

Solution

	q ₀	P ₀	P ₁	W = P ₀ q ₀	P ₁ q ₀	R = P ₁ /P ₀ ×100	WR
Rice	6	100	120	600	720	120/100×100=120	72,000
Wheat	8	80	90	640	720	90/80×100=112.5	72,000
Barley	70	70	70	70	70	70/70×100=100	70,000
Appar	2	120	115	240	230	115/120×100=95.83	22,999.2
Ghee	20	12	15	240	300	15/12×100=125	30,000
Sugar	1	160	170	160	170	170/160×100=106.25	17,000
				Σ P ₀ q ₀ =1950	Σ P ₁ q ₀ =2210		Σ RW =283999.2

(ii) Family Budgeted Method

CPI = $\frac{\sum RW}{\sum W} = \frac{283999.2}{1950} = 145.64$

Yes, there is a difference between the values calculated by the two methods.

Difference = 145.64 – 113.33 = 32.31

69 Yes, I agree with the given statement. Following difficulties have to be faced while constructing consumer price index:

- (i) Prices used in the construction of cost of living index are retail prices, which vary from shop to shop, place to place and consumer to consumer. Therefore, index numbers prepared on such prices cannot be used for different places or different classes of people.

- (ii) It includes so many so many commodities of unstable quality, which will not be used at different point of time.
The ratio of expenditures on different commodities at different point of time and by various persons is not same, which creates difficulties in constructions of cost of living index numbers.

	W	P ₀	P ₁	PR	WPR
Rice	4kgs	200	210	105	420
Pulses	1kg	100	80	80	80
Tomato	2kgs	120	180	150	300
Onion	1kg	40	40	100	100
Milk	7 liters	210	210	100	700
	$\Sigma W=15$				$\Sigma WPR=1600$

Calculation of Living Index or Consumer Price Index is calculated as follows:

Cost of Living Index No. = $\Sigma RW / \Sigma W$

= $1600 / 15$

= 106.66

CPI = 106.66

Comment: It shows that there is an increase in price by 6.66%. Which has a little effect on the standard of living.

B. Followings are the two methods of calculating CPI;

1. AGGREGATIVE EXPENDITURE METHIOD
2. FAMILY BUDGET METHOD

- 75 Indices by using;
- I. The simple average of price relatives,
 - II. The weighted average of price relatives;

Commodities	Unit	Weight (Rs. '000) (W)	2017 P ₀	2018 P ₁	(P ₁ /P ₀)*100 PR	WPR
A	Kg.	5	2.00	4.50	225	1125
B	Quintal	7	2.50	3.20	128	896
C	Dozen	6	3.00	4.50	150	900
D	Kg.	2	1.00	1.80	180	360
Total		$\Sigma W=20$			683	$\Sigma WPR=3281$

I. The simple average of price relatives Method;

$$P_{01} = \frac{\Sigma \{(P_1/P_0) * 100\}}{N}$$

$$= \frac{683}{4}$$

$$= 170.75$$

II. The weighted average of price relatives Method;

$$P_{01} = \frac{\Sigma WPR}{\Sigma W}$$

$$= \frac{3281}{20}$$

$$= 164.05$$

76	Commodity	Base year		Current year		P ₀ q ₀	P ₀ q ₁	P ₁ q ₀	P ₁ q ₁
		Price	Quantity	Price	Quantity				
	Good-A	6	50	10	56	300	336	500	560
	Good-B	2	100	2	120	200	240	200	240
	Good-C	4	60	6	60	240	240	360	360
	Good-D	10	30	12	24	300	240	360	288
	Good-E	8	40	12	36	320	288	480	432
	Total					∑ P ₀ q ₀ =1360	∑ P ₀ q ₁ =1344	∑ P ₁ q ₀ =1900	∑ P ₁ q ₁ =1880

I. Laspeyre's method;

$$L_{P01} = (\sum P_1 q_0 / \sum P_0 q_0) * 100$$

$$= (1900 / 1360) * 100$$

$$= 139.7$$

II. Paasche's method;

$$P_{P01} = (\sum P_1 q_1 / \sum P_0 q_1) * 100$$

$$= (1880 / 1344) * 100$$

$$= 139.9$$

III. Fisher's method;

$$P_{P01} = \sqrt{(\sum P_1 q_0 / \sum P_0 q_0) * (\sum P_1 q_1 / \sum P_0 q_1)} * 100$$

$$= \sqrt{\{(1900 / 1360) * (1880 / 1344)\}} * 100$$

$$= 139.98$$