Index Numbers

Standard difficulty · 20 questions · 40 marks · Time: 37 minutes

Name: _____ Date: _____ Score: ____ / 40

Write full answers in Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. An index number measures the relative change in a group of items between:

(a) two people **(b)** two subjects

(c) two countries only **(d)** a base period and a current period

2. In the book, the base period of the CPI for Agricultural Labourers is:

(a) 1978–79 **(b)** 2011–12 **(c)** 1986–87 **(d)** 2012

3. Prices (₹) of four goods: wheat 16 → 15, rice 8 → 10, pulses 13 → 18, tea 25 → 29. Find the simple aggregative price index.

(a) 116.13 **(b)** 16.13 **(c)** 86.11 **(d)** 121.13

4. The price of a good rises from ₹28 to ₹65. What is its price relative?

(a) 242.14 **(b)** 43.08 **(c)** 232.14 **(d)** 132.14

5. A worker's money wage is ₹31,000 and the cost of living index is 346. What is the real wage?

(a) ₹9,459.54 **(b)** ₹107,260 **(c)** ₹8,959.54 **(d)** ₹89.60

6. A salary was ₹32,900 in the base year. The CPI is now 393. What salary keeps the same standard of living?

(a) ₹96,397 **(b)** ₹33,293 **(c)** ₹129,297 **(d)** ₹129,397

7. A price index rises from 229 to 255. What is the rate of inflation over the period?

(a) 11.35% **(b)** 10.20% **(c)** 26% **(d)** 12.35%

8. Find Laspeyres' price index. tea: p0 ₹18, p1 ₹25, q0 2; sugar: p0 ₹9, p1 ₹9, q0 3; milk: p0 ₹30, p1 ₹32, q0 15.

(a) 113.58 **(b)** 108.58 **(c)** 115.79 **(d)** 116.86

Section B — Short answer — 8 × 2 = 16 marks

9. What is an index number?

10. Find Paasche's price index. wheat: p0 ₹16, p1 ₹22, q1 10; oil: p0 ₹19, p1 ₹24, q1 19; tea: p0 ₹27, p1 ₹36, q1 17.

11. Find the weighted index of price relatives. tea: weight 5, price relative 170; wheat: weight 5, price relative 165; pulses: weight 15, price relative 145; oil: weight 40, price relative 120.

12. Find the price index by the simple average of price relatives: sugar ₹18 → ₹24, oil ₹23 → ₹22, milk ₹16 → ₹16, tea ₹10 → ₹12.

13. The CPI is 355 (base = 100). What is a rupee of today worth in base-year rupees, and what does this show about purchasing power?

14. Explain each term: (a) base period (b) inflation

15. What does each measure? (a) the index of industrial production (b) the Sensex

16. The IIP weights in the book are mining 14.4, manufacturing 77.6 and electricity 8.0. If the sector indices are 147, 112 and 124, find the general index.

Section C — Longer answers — 4 × 4 = 16 marks

17. Distinguish between Laspeyres' and Paasche's price indices.

18. For these goods, tea: p0 ₹2, p1 ₹1, q0 2, q1 16; wheat: p0 ₹20, p1 ₹27, q0 4, q1 8; milk: p0 ₹9, p1 ₹8, q0 3, q1 19: (a) find Laspeyres' index (b) find Paasche's index (c) why do they differ?

19. A cost of living index: food weight 5, price relative 140; fuel weight 20, price relative 180; clothing weight 20, price relative 180; rent weight 15, price relative 165; others weight 40, price relative 110. (a) Find the index. (b) What does it mean? (c) What salary would keep a base-year salary of ₹44,000 worth the same?

20. A worker earned ₹12,000 a month in the base year and earns ₹51,000 now; the CPI is 352. (a) Find the real wage now. (b) Is the worker better or worse off than in the base year? (c) What wage would keep the base-year standard of living?

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Answer key

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Q	Answer	Working
1	**(d) a base period and a current period**	—
2	**(c) 1986–87**	—
3	**(a) 116.13**	Σp1 ÷ Σp0 × 100 = 72 ÷ 62 × 100
4	**(c) 232.14**	65 ÷ 28 × 100
5	**(c) ₹8,959.54**	31,000 ÷ 346 × 100
6	**(c) ₹129,297**	32,900 × 393 ÷ 100
7	**(a) 11.35%**	(255 − 229) ÷ 229 × 100
8	**(b) 108.58**	Σp1q0 ÷ Σp0q0 × 100 = 557 ÷ 513 × 100
9	**A statistical device that measures the relative change in a large number of items, like prices, over time.**	—
10	**131.43**	Σp1q1 ÷ Σp0q1 × 100 = 1,288 ÷ 980 × 100
11	**133.08**	ΣWR ÷ ΣW = 8,650 ÷ 65
12	**112.25**	relatives 133.33, 95.65, 100, 120; their mean
13	**₹0.28; purchasing power has fallen as prices rose**	100 ÷ 355
14	**(a) the period with which others are compared, taken as 100 (b) a general and continuing rise in prices**	—
15	**(a) changes in the quantity of industrial output (b) changes in the share prices of 30 leading companies**	—
16	**118**	(14.4 × 147 + 77.6 × 112 + 8 × 124) ÷ 100
17	**Laspeyres uses base period quantities as weights (Σp1q0 ÷ Σp0q0 × 100); Paasche uses current period quantities (Σp1q1 ÷ Σp0q1 × 100); only the weights differ.**	—
18	**(a) 120.72 (b) 105.79 (c) They use different weights: base period quantities in Laspeyres, current period quantities in Paasche.**	Σp1q0 ÷ Σp0q0 × 100; Σp1q1 ÷ Σp0q1 × 100
19	**(a) 147.75 (b) the cost of living has risen 47.75% since the base period (c) ₹65,010**	ΣWR ÷ ΣW = 14,775 ÷ 100
20	**(a) ₹14,488.64 (b) better off (c) ₹42,240**	51,000 ÷ 352 × 100; 12,000 × 352 ÷ 100

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