

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022  
(First Semester)

Branch – STATISTICS

**TIME SERIES AND INDEX NUMBERS**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. Arrangement of statistical data in chronological order is known as \_\_\_\_\_.  
a) stochastic process                      b) Time series  
c) Analysis of time                         d) demand analysis
2. The oscillatory movements in a time series with period of oscillation more than one year are termed as \_\_\_\_\_.  
a) Seasonal variation                      b) Cyclic variation  
c) Secular trend                             d) Irregular variation
3. The best average for constructing an index number is \_\_\_\_\_.  
a) Mode                                        b) Median  
c) Geometric mean                         d) Arithmetic mean
4. The Fisher's index number does not satisfy the \_\_\_\_\_.  
a) Unit test                                    b) Time Reversal test  
c) Circular test                                d) Factor Reversal test
5. The consumption of Fixed Capital known as \_\_\_\_\_.  
a) Depreciation                              b) Capital Formation  
c) Investment                                 d) Retail trading

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

6. a. Fit a straight line trend by the method of least squares to the following data:

year	1997	1998	1999	2000	2001	2002	2003	2004
Sales(in crores)	76	80	130	144	138	120	174	190

(or)

- b. Explain about the irregular variation in time series.

Cont...

7. a. Calculate seasonal indices by ratio to moving average method for the given data:

Quarter\ Year	2001	2002	2003	2004
Q1	75	86	90	100
Q2	60	65	72	78
Q3	54	63	66	72
Q4	59	80	85	93

(or)

b. Describe about the measurement of cyclic variations.

8. a. Explain Chain base index number.

(or)

b. List the uses of index number.

9. a. Prove that Fisher's index number satisfy both Factor reversal and time reversal test.

(or)

b. Mention the uses of cost of living index number.

10. a. List the uses of the national income estimate.

(or)

b. Explain about social accounting method.

### SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a. Explain In detail about measurement of trend.

(or)

b. Obtain 5 yearly and 7 yearly moving averages for the following data:

year	1	2	3	4	5	6	7	8	9	10
Value	220	208	156	210	218	240	230	220	228	244
year	11	12	13	14	15	16	17	18	19	20
Value	260	254	244	236	260	280	270	260	254	270
Year	21	22	23	24	25	26	27	28	29	30
value	292	284	276	270	290	310	300	296	286	312

12. a. Compute the seasonal indices by the link relative method for the adjoining data relating to the average quarterly price (Rs. Per kg) of a commodity for five years:

Quarter\ Year	1996	1997	1998	1999	2000
I	30	35	31	31	34
II	26	28	29	31	36
III	22	22	28	25	26
IV	36	36	32	35	33

(or)

b. Explain ratio to trend method and give its merits and demerits.

Cont...

13. a. Explain basic problems involved in construction of index number.

(or)

b. Construct the wholesale price index number for 2004 and 2005 from the data given below (using 2003 as the base year).

Commodity	Wholesale price (in '00 Rs) per quintal.		
	2003	2004	2005
A	140	160	190
B	120	130	140
C	100	105	108
D	75	80	90
E	250	270	300
F	400	420	450

14. a. Show that Marshall Edgeworth index number lies between Laspeyre's and Paasche's index numbers.

(or)

b. Compute price index and quantity index numbers for the year 2005 with 2000 as base year, using (i) Laspeyre's Method, (ii) Paasche's Method, and (iii) Fisher's method.

Commodity	Quantity(units)		Expenditure (Rs.)	
	2000	2005	2000	2005
A	100	150	500	900
B	80	100	320	500
C	60	72	150	360
D	30	33	360	297

15. a. Explain estimation methods of national income.

(or)

b. Explain in detail about the difficulties in computing of national income.

Z-Z-Z

END