PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch-**STATISTICS**

TIME SERIES AND INDEX NUMBERS

Time: Three Hours   Maximum: 75 Marks
SECTION-A (10 Marks!
Answer ALL questions
ALL questions carry EQUAL marks   (1 0 x 1 = 10)

1   Time series is used in
    (i) Price fixation   (ii) Calculation
     (iii) predicting the future   (iv) Economic growth

2   Trend is measured using_____ method.
    (i)   Moving average   (ii)   Link relative
    (iii) Simple average   (iv) Chain relative

3   The method of measuring seasonal variations is_____ method.
    (i)   Trend method   (ii)   Moving average
    (iii) Graphic method   (iv) Link relative method.

4   Example for seasonal variations are_____ .
    (i)   Rainfall   (ii)   Earth quakes
    (iii) Demand for electric fans in summer (iv) Changes in population

5   Index Numbers are_____.
    (i) Indicators which reflects the changes (ii) Study the price rise
    (iii) Economic fluctuations   (iv) National Income

6   Whole sale price Index represents_____ .
    (i) Price of goods at Initial stage (ii) Price of goods at market stage
    (iii) Price of goods at whole sale stage (iv) Increase in prices.

7   Name the test for Ideal Index umbers_____.
    (i) Mathematical test   (ii) Time reversal Test
    (iii) Regular Test   (iv) Uniform Test

8   Cost of living Index are constructed using_____ .
    (i) Family Budget methods   (ii) Fisher's methods
    (iii) Paasche's methods   (iv) Laspeyer's methods

9   National Income derotes
    (i) Price rise   (ii) Total value of goods and services
    (iii) Primary data   (iv) Financial data

10 National Income is measured through_____.
    (i) Product Method   (ii) Fisher's Method
    (iii) Chain Base Method   (iv) Paasche's Method

SECTION - B *(25 Marks)*
Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 5 = 25)

1 1 a Fit a trend line to the following data by using 3-year moving averages.

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996
production	21	22	23	25	24	22	1 25	26	27

OR

b Describe additive and multiplication models of time series .

12   a Explain the procedure of finding seasonal indices by Ratio-to-trend method.

12 Cont.

b

Year	I Q	II Q	III Q	IV Q
2010	40.3	44.8	46.0	48
2011	50.1	53.1	55.3	59.5
2012	47.2	50.1	52.1	55.2
2013	55.4	59.0	61.6	65.2

Calculate the seasonal variation Indices using Simple Average Method.

13 a Discuss the uses of Index Numbers.

OR

b From the chain base Index Numbers given below obtain the fixed base index numbers.

year	2010	2011	2012	2013	2014	2015
Chain indices	105	75	71	105	95	90

14 a Describe the problems involved in the construction of index numbers.

OR

b Explain about chain base method and the steps involved in the construction of Chain Indices.

15 a Define National Income and write its use.

OR

b Illustrate the product method of estimation of National Income.

SECTION -C (40 Marks!

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 8 = 40)

16 a Fit a Straight line for the following series and plot the values on the graph

Year	2011	2012	2013	2014	2015	2016	2017
Production	60	72	75	65	80	85	95

OR

b Estimate the trend values using the data given by taking four-yearly moving

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	-
Value	2204	2500	2360	2680	2424	2634	2904	3098	3172	2952	3248	3172	-

Calculate the seasonal variation by Link Relative method

Quarter/year	2009	2010	2011	2012	2013
I	30	35	31	31	34
II	26	28	29	31	36
III	22	22	28	25	26
IV	31	36	32	35	33

OR

b Obtain the derivation for Variate difference method to estimate the variance of the random component.

18 a Explain in detail about whole sale price index numbers and its uses.

OR

b Elaborate steps in the construction of cost of living index numbers.

Commodity	2000		2005	
	Po	qo	Pi	qi
A	15	15	22	12
B	20	5	27	4
C	4	10	7	5

OR

b What are tests for Ideal Index Numbers.

20 a Explain in detail the computational difficulties of measuring National Income.

OR

b Identify the methods of measurement of National Income.