

FSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
BA DEGREE EXAMINATION MAY 2018  
(Fourth Semester)

Branch - ECONOMICS

STATISTICAL METHODS - II

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks ( 10 x 2 = 20)

- 1 State any two uses of index numbers.
- 2 Write down the formula for (i) Laspeyre's method (ii) Paasche's method.
- 3 Define time series.
- 4 Give the four components of a time series.
- 5 What is the probability of drawing a king from a pack of 52 cards?
- 6 Define Addition Theorem.
- 7 What do you mean by binomial distribution?
- 8 Under what conditions normal distribution is applicable?
- 9 State any two properties of Chi-square distribution.
- 10 What is chi-square test of goodness of fit?

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks ( 5 x 5 = 25)

- 11 a From the fixed base index number.

(a) Given below, calculate the chain base index number

Year:	1990	1991	1992	1993	1994
Fixed base index:	267	275	280	280	320

OR

- b What are the problems that are involved in the Construction of an Index Number?

- 12a Fit a trend line for the following data by the method of Semi-Average.

Year:	1995	1996	1997	1998	1999	2000	2001	2002	2003
Production of wheat:	10	14	15	13	12			16	15

OR

- b Calculate three year moving average for the following data.

Year:	1995	1996	1997	1998	1999	2000	2001	2002
Output of TVS ("000 units):	30	62	74	88	96	85	98	102

- 13 a What are the basic concepts of probability?

OR

- b Three coins are tossed simultaneously what is the probability that the three coins show (i) 3 heads (ii) 2 heads and 1 tail?

Cont....

- 14 a The mean of the binomial distribution is 20 and its standard deviation is 4 calculate n, p and q.

OR

- b The life time of certain bulb has mean of 3000 hours and a standard normal distribution deviation of 350 hours. Assuming that the distribution of lifetimes, which are measured to the nearest hour, is normal find the percentage of bulbs which have life time of more than 3700 hours.

- 15 a Write down the analysis of variance table for a two way layout.

OR

- b The following table shows the yield on 12 plots of land in three samples each of 4 plots under three varieties of fertilizers A, B & C.

	A	B	C
	25	20	24
	22	17	26
	24	16	30
	21	19	20

Is there any significant difference in the average yields of land under the three varieties of fertilizers?

**SECTION - C (30 Marks!**

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 With the help of the following data prove that Fisher's ideal index satisfies both the time reversal test and factor reversal test.

Commodity	2014		2015	
	Price	Value	Price	Value
A	5	50	6	72
B	7	84	10	80
C	10	80	12	96
D	4	20	5	30
E	8	56	8	64

- 17 Fit a straight line trend by the method of least squares for the following data:

Year:	2011	2012	2013	2014	2015
Profit (Rs' 000):	70	74	80	86	90

- 18 a) Arun contains of 10 black and 15 white balls one ball is drawn at random what is the probability that the ball drawn is black?

- b) What is the probability of getting two heads in tossing two coins simultaneously?

- 19 The height of students in a class is normally distributed with mean 164 cms and a standard deviation of 15.5 cms. Find the percentage of students whose height falls between 137 and 172 cms.

- 20 From the data given below about the treatment of 500 patients suffering from a disease, state whether the new treatment is superior to the conventional treatment ( $\chi^2_{0.05} = 3.84$ ).

	Number of patients		Total
	Favourable	Not Favourable	
New	280	60	340
Conventional	120	40	160
Total	400	100	500