STATISTICAL METHODS - II

Time : Three Hours   Maximum : 75 Marks

SECTION-A (20 Marks)
Answer ALL'questions
ALL questions carry EQUAL marks   (1 0 x 2 = 20)

1   What is price index number?

2   Write down the Laspeyre's formula to construct price index number.

3   Give the meaning of time series analysis.

4   Define semi-average method.

5   Write the meaning of probability.

6   What is simple events?

7   Define theoretical distribution.

8   What do you mean by Poission distribution?

9   What is chi-square test?

10   Expand ANOVA.

SECTION - B (25 Marks!
Answer ALL Questions
ALL Questions Carry EQUAL Marks (5 x 5 = 25)

1 1 a What is Weighted index number? Explain.

OR

b Construct the price index number using Laspeyre's method.

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	4	40	2	60
B	2	50	5	100
C	3	10	4	40
D	1	30	3	50

12 a Explain the usefulness of time series.

OR

b Fit a straight line trend using semi-average.

Years:	2000	2001	2002	2003	2004	2005	2006	2007
Food grains Production:	138	141	145	148	156	160	174	210

13 a   State the additional theorem of probability.

OR

b From a pack of card, what is the probability of getting a spade or a heart and the probability of getting a spade ace or a club queen?

14 a   List out the properties of normal distribution.

OR

b The probability that an evening college students will graduate is 0.4. Determine the probability that out of 5 students (a) None (b) One and (c) At least one will graduate.

15 a Briefly explain the characteristics of chi-square test.

OR

b A dice is tossed 120 times with the following results:

No. turned up:	1	2	3	4	5	6	Total
Frequency:	30	25	18	10	22	25	430

Test the hypothesis that the dice is unbiased.

SECTION - C (30 Marks)
Answer any THREE Questions
ALL Questions Carry EQUAL Marks $(3 \times 10 = 30)$

16 Construct Fisher's index number and show how it satisfies time reversal test and factor reversal test.

Commodity-	Base Year		Current Year	
	Price	Quality	Price	Quantity
A	10	12	12	15
B	7	14	5	20
C	5	24	9	20
D	16	5	14	-5

17 Fit a straight line trend using the method of least squares.

Year:'	2000	01	02	03	04	05	06	07	08
Production (in million tonnes):	2,	23	25	* 24	25.	26	26	27	28

18 A boy and a girl appear in an interview for two vacancies in the same post. The probability of boy's selection is 1/5 and that of girl's selection is 1/3. Find the probability that
(a) Both of them will be selected
(b) Only one of them will be selected
(C) None of them will be selected. *

19 Find the probability that at most 5 defective bolts will be found in a box of 200 bolts if it is known that *2%* of such bolts are expected to be defective $(e^4 = 0.0183)$.

20 1000 families were selected at random in a city to test the belief that high income families usually send their children to public schools and the low income families often send their children to govt, schools. The following ' results were obtained.

	School		
Income	Public	Govt.	Total
Low,	370	430	800
High	130	70	200
Total	500	500	1000

Test whether the income and type of schooling are independent.

✓

Z-Z-Z   END