GURUDAS COLLEGE STATISTICS -GENERAL- PRACTICAL B.Sc. 4th Semester, August 2021 Full Marks-30 Time: 2.30 hours

1. Below are given the figures of production (in thousand tonnes) of a fertilizer factory:

0							
Year	1995	1997	1998	1999	2000	2001	2004
Production	77	88	94	85	91	98	90
('000 tonnes)							

Fit a straight-line trend equation by the least square method and tabulate the trend values.

(8)

2. The number of births occurring in a country in a certain year is given. Data have been classified according to the age of mothers, together with the female population in different age groups in the child bearing period. Total population of the country in the year was 2286 thousand. Obtain (i) Crude Birth Rate, (ii) General Fertility Rate, (iii) Age Specific Fertility Rates.

Age group (in years)	Female Population ('000)	Number of live births to the	
	$({}^{\mathrm{f}}{}_{\mathrm{n}}\mathbf{P}_{\mathrm{x}})$	mothers in their child	
		bearing period $(_nB_x)$	
15-19	85	2300	
20-24	70	14500	
25-29	73	16700	
30-34	76	10200	
35-39	75	5100	
40-44	72	1400	
45-49	67	100	

(7)

3. A sample of 30 students is to be drawn from a population consisting of 300 students belonging to two colleges A and B. The means and standard deviations of their marks are given below:

	Total number of students	Mean	Standard deviation
College A	200	30	10
College B	100	60	40

How would you draw the sample using proportional allocation technique? Hence obtain the variance of estimate of the population mean and compare its efficiency with SRSWOR.

4. Prepare price and quantity index numbers for 2005 with 2002 as base year form the following data by using (a) Fisher's and (b) Edgeworth's method.

Article	200)2	2005		
	price	quantity	price	quantity	
I	5.00	5	6.50	7	
II	7.75	6	8.80	10	
Ш	9.63	4	7.75	6	
IV	12.63	9	12.75	9	

With reference to the above, verify that the Factor Reversal Test and Time Reversal Test are satisfied by Fisher's Formula.