ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
B.Sc. STATISTICS – II SEMESTER (OPEN ELECTIVE)
SEMESTER EXAMINATION: APRIL 2022
(Examination conducted in July 2022)
STOE – 3: APPLIED STATISTICS

Time: 2 Hours   **Max: 60 Marks**
*This question paper contains **Two** printed pages and **Three** parts*
Note: Scientific calculators are allowed

PART A

I   Answer any FIVE of the following: 3x 5 = 15

1. What is an index number? Write any two uses of the same.
2. Define time series data. Give any 2 examples of the same
3. What is demographic data? Write any two sources of demographic data.
4. Calculate crude death rate for the following data.

Age Group	0 – 5	5 – 15	15 – 25	25 – 35	35 – 50	50+
No. of Deaths	200	420	550	400	300	1000
Total Population	100000	200000	350000	200000	300000	400000

5. Define two types of errors in sampling.
6. Define Census. Write any one advantage and disadvantage of the same.
7. Differentiate between chance causes and assignable causes with an example with respect to SQC.

PART B

II   Answer any FIVE of the following: 5x 5 = 25

8. Calculate the price index number of the following data by using Marshall - Edgeworth Index number.

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	10	9	20	8
B	20	5	30	4
C	30	7	50	5
D	40	8	60	6

9. Calculate the trend values using semi average method.

Year	1990	1991	1992	1993	1994	1995	1996	1997
Sales	65	95	115	63	120	100	150	135

10. Calculate Age Specific Mortality rate for the following data. What is the infant mortality rate?

AGE	0 – 1	2 – 5	6 – 11	11 – 16	17 – 22
Number of Deaths	103	200	250	200	250
Population	120000	150000	200000	170000	230000

11. A) In a particular city out of 1800 live births in a year, 90 newborn babies died within 28 days and 150 babies died from 28 days to a year. Calculate neonatal mortality rate.
    B) Differentiate between a population and a sample. Why do we need a sample?

12. Briefly give an overview of Simple random sampling and Stratified random sampling with its merits and demerits

13. What is an attribute? Give the control limits for p and c charts.

14. Briefly explain sampling plan with respect to Statistical Quality Control.

PART C

III   Answer any two of the following: 10x 2 = 20

15. Calculate Fischer's Quantity Index number and Paasche's Price Index number for the following data. (10)

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
Rice	10	5	12	6
Wheat	15	10	17	8
Moong	8	8	10	10
Dal	10	10	10	15

16. A) From the following data calculate TFR, GFR and ASFR.   (6)

AGE	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44	45 – 49
Women Population	85000	70000	72500	76000	75100	71620	66660
Number of Live births	350	15000	16200	12000	800	85	45

    B) Briefly explain Systematic random sampling.   (4)

17. A) Define i) Control Limits, ii) Specification Limits, iii) Tolerance limits, iv) Producer's risk, v) Consumer's risk   (5)
    B) You are to conduct a survey regarding College Elections in your college. Devise a questionnaire for the same.   (5)