



KLE Society's

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MODEL QUESTION PAPER – 2

Class : II PU	Subject : STATISTICS	Subject Code : 31
Year : 2020 – 21	Duration : 3 hour & 15 mins	Maximum Marks : 100

- NOTE:**
1. Statistical tables will be supplied on request.
 2. Scientific Calculator is allowed.
 3. All working steps should be clearly shown.

SECTION – A

I Answer any TEN of the Questions:

(10 x 1 = 10)

1. Define Fertility.
2. If GRR per woman is less than 1, then what does it indicate about the population?
3. What is radix?
4. Name the index number satisfies circular test.
5. Which index number is considered as the best average in the construction of index number?
6. If current year price index is 145, what would you conclude?
7. State the formula for computing CPI by family budget method.
8. Define Seasonal Variation.
9. Mention one demerit of method least square for measuring trend.
10. Write the relationship between mean and variance of a Bernoulli distribution.
11. If Z is a SNV, then name the distribution of Z^2 .
12. Name the distribution for which variance and S.D of are equal.

SECTION – B

II Answer any TEN of the Questions:

(10 x 02 = 20)

13. Mention any two vital events occurring in human population.
14. In a life table, if $l_1=90,000$ and $l_2=87,300$ then, find Survival ratio.
15. State any two limitation of index numbers.
16. If $\sum p_0q_0=400$, $\sum p_1q_0=300$, Construct a suitable index number and comment.
17. Why Fisher's index number is called as an 'Ideal index number'?
18. State two conditions of least squares method of measuring trend.
19. Define Time series.
20. Which component of a time series associated with the following sentences?
 - a) Fall in death rate due to advance in science.
 - b) An increase in employment during harvest season.
21. Write two assumption of interpolation and extrapolation.
22. Find $P(x=0)$ in a Poisson distribution with mean 2.
23. For a Chi-square variate with 9 d.f , find mean and variance.
24. Mention two properties of a student's t- distribution.

SECTION – C

III. Answer any TEN of the Questions:

(08 x 05 = 40)

25. Compute Total Fertility Rate.

Age group (in years)	Female population	Live births
15-19	8,000	320
20-24	11,000	660
25-29	15,000	1,350
30-34	20,000	2,000
35-39	15,000	1,035
40-44	6,000	180
45-49	5,000	55

26. Compute the Gross reproduction rate from the following data.

Age group (in years)	Female population	Female birth
15-19	10000	200
20-24	9000	540
25-29	8000	400
30-34	7000	280
35-39	6000	180
40-44	5000	100
45-49	4000	40

27. Define index number. Mention any three characteristics of Index number.

28. Compute suitable index number from the following data and comment on the result.

Commodity	I	II	III	IV
P_1	06	04	05	02
P_0	05	03	04	02
q_1	30	15	18	10

29. Calculate Cost of living index number from the data.

Items	Food	Education	Rent	Fuel	Clothing
Group index	110	120	112	108	105
Weight	03	08	04	06	09

30. Explain Semi-average method of measuring trend. Write down its merits and demerits.

31. Find trend value by four yearly moving average for the following time series.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sales('000)	80	85	82	90	100	95	85	84	98

32. Fit a linear trend by the method of least square.

Year	2003	2004	2005	2006	2007
Sales(in Lakhs)	70	74	80	86	90

33. Interpolate the number of person below the age 70 years from the following data.

Age(in Year)	0-20	20-40	40-60	60-80	80-100
No. of persons	333	160	135	67	65

34. The number of accidents in a year attributed to taxi drivers in a city follows Poisson distribution with mean 2.5. Out of 1000 taxi drivers, find approximately the number of drivers with i) one accident in a year ii) more than three accidents in a year.

35. There are 20 fruits in a basket, out of which 8 are mangoes and rest are Oranges. A girl picks 5 fruits at random from the basket. Find the probability that she gets 3 mangoes.

36. State five properties of a normal distribution.

SECTION – D

IV. Answer any TEN of the Questions: (02x 10 = 20)

37. From the following data, compute crude birth rates and standardized death rates. Comment on the result.

Age (years)	Locality A [Standard]		Locality B	
	Population	Death	Population	Death
Below 10	5000	140	5000	145
10-25	12000	50	14000	60
25-65	15000	80	20000	90
65 & above	4000	150	1000	110

38. Compute Marshall-Edgeworth's index number. Test whether it satisfies TRT and FRT?

Items	Price(Rs)		Quantity	
	2010	2012	2010	2012
A	08	02	10	03
B	10	03	12	05
C	06	04	10	04
D	05	05	04	06

39. Fit a Parabolic curve for the time series data .Estimate the value for the year 2011

Year	2004	2005	2006	2007	2008	2009	2010
Value	14	16	20	28	42	61	81

40. Fit a Poisson distribution for the given data.

No. of TV set sold	0	1	2	3	4	5	6&more
No. of days	18	43	45	28	12	04	0

SECTION – E

V Answer any TWO of the following questions:

(2 x 5 = 10)

41. Compute Age –specific death rate

Age (years)	Population	Deaths
0-9	20000	1000
10-19	15000	500
20-29	10000	200
30-39	8000	100
40-49	8000	120
50-59	7000	150
60 and above	18000	1200

42. Compute Kelly's price index number.

Items		A	B	C	D
Price(Rs)	2012	4	6	8	7
	2018	5	5	10	10
Quantity		2	4	5	3

43. By Binomial expansion expansion method estimatw the number of persons for the age 24 and 30 yuears with the help of following table.

Age	18	20	22	24	26	28	30
No. of Persons	20	22	26	?	35	39	?

44. If X follows $N(100, 3^2)$, find the probability the value of the variate lies between
 i) 97 and 106 ii) 100 and 103.