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**17-04-2018**

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

B.Sc. STATISTICS - VI SEMESTER

**SPECIAL SUPPLEMENTARY EXAMINATION: APRIL 2018**

**ST: 6114 – Applied Statistics**

**Time: 3 Hours Max Marks: 100**

(For supplementary candidates)

Do not write the register number on the question paper

Please attach the question paper along with the answer script.

This question paper has **TWO** printed pages and **THREE** parts

**I Answer any TEN of the following: 10 x 3 = 30**

1. Write a note on Central Statistical Office (CSO).
2. Define Index number and mention any two advantages.
3. Differentiate between mortality and fertility.
4. Define Z (sigma) score and mention any two disadvantages of it.
5. Explain Educational Quotient with an example.
6. What do you mean by observational studies? Mention different types of it.
7. Define i) Therapeutic trials and ii)Non-therapeutic trials with an example.
8. Define time series data and give four examples.
9. Define consumer price index number and explain any one measurement of it.
10. If Laspeyre’s index number is 352.6 and Pasche’s index number is 338.4

then find Fisher’s index number.

1. What is Partial elasticity of demand?
2. Briefly explain Giffen’s Paradox

**II Answer any FOUR of the following: 4 x 10 = 40**

1. A) Write a note on Pareto’s law of Income distribution (5)

B) Explain measurement of population. (2)

C) Write a note on Randomized control studies. (3)

1. A) For the following data obtain the odds ratio and 95% confidence interval for same

|  |  |
| --- | --- |
| Groups | Lung Cancer |
| Present | Absent |
| Smoking | 68 | 30 |
| Non - smoking | 5 | 51 |

 $Z\_{\frac{α}{2}} =1.96$ (5)

 B) Write a note on Body Mass Index (BMI). (2)

 C) Write a note on time series models? (3)

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1. A) Explain any five measurements of death rate. (5)

 B) Explain the steps involved in construction of T-score (5)

1. A) Explain the method of least squares in estimating the curve Y= abx (5)

 B) Derive the Demand function with constant price elasticity. (5)

1. A) Define Vital Statistics and give any three application of Vital Statistics (5)

B) Prove that Fisher’s Index Number is ideal index number. (5)

1. A) Explain any two measures of Income Inequality. (4)

B)If U = 3X2Y2+Y2 is the utility function, find the marginal utilities of commodities X and Y. also show that rate of change of marginal utility of commodity X with respect to Y is equal to rate of change of marginal utility of commodity Y with respect to. X. (4)

C) Define Price elasticity. (2)

**III Answer any TWO of the following: 2 x 15 = 30**

1. A) What is national income? Explain any one method of estimating national income (5)

B) Explain the construction of scaling of rankings in terms of normal curve. (5)

C) Explain method of moving average in estimating trend in a time series data (5)

 20. A) What is Life table? Mention any two applications of it (4)

B) Differentiate between Positive Predictive value and Negative Predictive value (2)

C) Explain any three components of time series with an example. (6)

D) Write a note on standardized death rate and total fertility rate (3)

 21. A) State and prove force of mortality at age x. (4)

B) State Engel’s law and Engel’s curve (5)

C) Define Gross Reproduction rate and Derive the relationship between Gross Reproduction rate and Net Reproduction rate (6)

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