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DATE: 28-06-2019

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

B.Sc. STATISTICS - VI SEMESTER

**Special Supplementary Examination, JUNE 2019**

**ST: 6117 – Applied Statistics**

Supplementary candidates only.

**Time: 2½ hrs Max: 70 Marks**

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

**PART – A**

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

1. Write a note on national income
2. Explain retrospective studies
3. Define time series data? Mention components of time series.
4. Briefly explain steps involved in generating random observations from Poisson distribution
5. State the laws of supply and demand.
6. Write down multiple linear regression model involving two independent variables with usual notations and mention any two assumptions
7. Write down test statistic for testing significance of regression coefficient

**PART – B**

**II Answer any FIVE of the following: 5 x 7 = 35**

1. A) List out any three main functions or publications of National Sample Survey Organization (3)

B) Explain least squares method of estimating trend in time series analysis (4)

1. A) Differentiate between false positive rate and false negative rate (3)

B) Define odds ratio and write down 95% confidence interval for odds ratio. (4)

1. A) Explain generation random observations from exponential distribution (4)

B) List out any three advantages of simulation (3)

1. A) Explain construction of seasonal indices by method ratio to moving averages method (4)

B) Interpret regression coefficients from the following regression equation: *Y*=23.6 + 4.2*X* (3)

 Where Y = salary of individuals (in Rs. ‘000) and X = Age (in years)

1. Explain Pigous’s method of determining demand curve from time series data (7)
2. A) Write a note coefficient determination with reference to regression analysis (3)

B) Explain backward method of selecting variables in regression analysis (4)

1. A) Write down the test statistic for testing significance of regression model (2)

B) Write a note on multicollinearity and autocorrelation (5)

**PART – C**

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

1. A) Explain construction of Gini’s Coefficient and how is it useful? (5)

 B) Explain construction of receiver operating characteristic curve and

 mention applications of ROC curve (5)

1. A) Write a note on Engel’s law and Engels curve (4)

B) Derive an expression for partial correlation between X1 and X2 by fixing X3 (3)

C) Explain Business cycle with neat diagram with reference to time series (3)

1. A) Define residual (2)

B) Explain any one method or test for assessing normality assumption (3)

C) Derive least squares estimates of parameters of simple linear regression model (5)