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|  |  |  |  |  | Date: 26-6-19 |  |
| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27** |
| **B.A. - VI SEMESTER** |
| **Special Supplementary Examination, JUNE 2019** |
| **ECA 6318 – Basic Econometrics** |
| Supplementary candidates only. |  |
| **Time- 2 1/2 hrs** |  |  **Max Marks-70** |  |

1. **Answer any TEN of the following. 3X10=30**
2. Define Econometrics.
3. Differentiate between correlation and regression.
4. What is conditional probability?
5. To explain what determines the price of air conditioners an econometrician has obtained the following regression results based on a sample of 19 air conditioners.

 $\hat{Yi}$= -68.236 + 0.023X2 i+ 19.729X3i + 7.653x4i

S E = (0.005) (8.992) (3.082)

 R2=0.986

 Where Y = Price in Dollars

 X2 = Rating of the air conditioner

 X3 = Energy efficiency ratio

 X4 = Number of settings

 S E = Standard Error

1. Interpret the regression results.
2. Do the results make economic sense?
3. Differentiate between Null and Alternative Hypothesis.
4. State any three consequences of Heteroscadasticity.
5. What are Partial Regression Coefficients? Give an example.
6. What is an error term? What are its objectives?
7. State the difference between the adjusted and unadjusted R square.
8. What is‘t’ statistic? When is it applied?
9. Lucas Tool Rental would like to assign probabilities to the number of car polishers it rents each day. Office records show the following frequencies of daily rentals for the last 40 days. Compute the probability by relative frequency approach.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. of Polishers rented | 0 | 1 | 2 | 3 | 4 |
| No of days | 4 | 6 | 18 | 10 | 2 |

1. What are Log linear model? Give an example.

**PART B**

1. **Answer any TWO of the following. 2x5=10**
2. Based on the information on 1, 000 randomly selected fields about the tenancy status of the cultivation of these fields and use of fertilizers collected in an agro economic survey, the following classification was noted.

|  |  |  |
| --- | --- | --- |
|   | Owned | Rented |
| Using fertilizers | 416 | 184 |
| Not using fertilizers | 64 | 336 |

Carry out chi-square test to know whether owner cultivators are more inclined towards the use of fertilizers at 5% level.(The critical value for 1 degree of freedom is 3.84).

1. The following table provides a probability distribution of random variable y

|  |  |
| --- | --- |
| Y | f(y) |
| 2 | 0.2 |
| 4 | 0.3 |
| 7 | 0.4 |
| 8 | 0.1 |

1. Compute E(y)
2. Compute the variance and standard deviation of y
3. What is an estimator? Explain the properties of point estimator.

**PART C**

1. **Answer any TWO of the following 2X15=30**
2. A manufacturing company has purchased three new machines of different makes and wishes to determine whether one of them is faster than the others in producing a certain output. Five hourly production figures are observed at random from each machine and the results are given below:

|  |  |  |  |
| --- | --- | --- | --- |
| Observations | A1 | A2 | A3 |
| 1 | 25 | 31 | 24 |
| 2 | 30 | 39 | 30 |
| 3 | 36 | 38 | 28 |
| 4 | 38 | 42 | 25 |
| 5 | 31 | 35 | 28 |

Use analysis of variance (ANOVA) and determine whether the machines are significantly different in their mean speed (Given at 5% level critical value=3.89)

1. The World Bank collects information on the life expectancy of a person in each country and the fertility rate per women in the country. The data for ten randomly selected countries for the year 2011 are in the following table.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fertility rate (y) | 1.7 | 5.8 | 2.2 | 2.1 | 6.9 | 6.8 | 5.2 | 1.5 | 3.9 | 4.7 |
| Life expectancy (x) | 77 | 55 | 69 | 76 | 54 | 55 | 53 | 73 | 72 | 64 |

1. Estimate a regression equation of fertility on life expectancy
2. Compute R2
3. Interpret your results.
4. What is multicollinearity? What are its consequences? How is it detected? Suggest the remedial measures.