2nd Answer

① Adjusted $R^2 = 1 - \frac{SSE/(N-k-1)}{SST/(N-1)}$

② Hypothesis test for coefficient $\beta_1 = \beta_2 = \beta_3 = \ldots = 0$

③ ANOVA (F test)

④ Residual Analysis → shapiro test, scatter, pp plot of

⑤ multicolinearity check → heatmap

ANDHRA UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2019-2020)

IV B.Tech I Semester Examinations

Computer Science and Engineering

Subject Name: Data Analytics
Date: 08/11/2019
Exam: E4SIMT3

Subject Code: CS4411
Time: 45 Min
Max Marks: 15

SECTION –A (5M)

Answer all 5 Questions

1. What is difference between R square and Adjusted R square? (1Mark)

2. Which statistical test used to check homogeneity of variances among groups. (1Mark) → Bartlet test

3. Write formula for calculating Pearson correlation coefficient . (1Mark)

4. Which statistical test used to check normality of data. (1Mark) → shapiro test

5. What is ANOVA test? When it is appropriate to use ANOVA? (1Mark)

↳ to compare more than 2 groups, the ratio of variance within group and variance across group

$f = \frac{MSB}{MSW}$

SECTION – B(10M)

1st Answer

Answer any two Questions

1. An education researcher is comparing four different algebra curricula. Eighth grade students are randomly assigned to one one of the four groups. Their state achievement test scores are compared at the end of the year. Use the appropriate statistical procedure to determine whether the curricula differ with respect to math achievement. An alpha criterion of .05 should be used for the test.

	N	Mean	SD
Curriculum 1	50	170.5	14.5
Curriculum 2	50	168.3	12.8
Curriculum 3	50	168.6	17.7
Curriculum 4	50	172.8	16.8

MSB = 276.33

MSW = 242.41

$f = \frac{MSB}{MSW} = \frac{276.33}{242.41} = 1.14$

Do not reject H0 (Null Hypothesis)

1). Coefficient of determinant Adjusted R^2
2. Hypothesis test β_i
3) ANOVA

2. Explain about all measures and tests used to validate Multiple Linear Regression Model.

3. Estimate the Coefficients of the Linear Regression using Ordinary Least Squares for the given data points

Consider the following set of points: {(-2 , -1) , (1 , 1) , (3 , 2)}

3rd Answer

$\beta_1 = \frac{(n\Sigma xy - \Sigma x \Sigma y)}{(n\Sigma x^2 - (\Sigma x)^2)}$

$\beta_1 = \frac{(3\times 9 - 2\times 2)}{3\times 14 - 2^2} = \frac{23}{38}$

$\Sigma x = 2$
$\Sigma y = 2$
$\Sigma xy = 9$
$\Sigma x^2 = 14$

$\beta_0 = \frac{1}{n}(\Sigma y - \beta_1 \Sigma x)$

$\beta_0 = \frac{1}{3}(2 - \frac{23}{38} \times 2) = 5/9$

END OF THE PAPER