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Faculty of Science and Technology
Department of Science and Technology
200 level 2nd Semester Examination – Dec./Jan. 2017/18
SCT 202-2 Statistical Methods



2. A production manager has compared the scores of a test to check the fastness of employees in an assembly-line with their productivity. The data are shown in following table (Table 01).

Table 01: Data of Employees

Employee	x = Score on test	y = Units produced in one hour
A	12	55
B	14	63
C	17	67
D	16	70
E	11	51

- a. To get a relationship between "score on test" and "units produced in one hour", what is the suitable analysis he has to perform? (02 mark)
 - b. What is the suitable model for this analysis? (03 mark)
 - c. Write down hypothesis for the particular analysis. (04 mark)
 - d. Construct the complete ANOVA table for the test.
(Suppose that in usual notation, $SSE = 22.8$, and $SSTol = 256.8$) (05 mark)
 - e. Check the model adequacy at 5% significance level (using F ratio). (04 mark)
 - f. Find the coefficient of determination (R^2) and interpret it. (04 mark)
 - g. What are the model assumptions? (04 mark)
3. An experiment was conducted to compare 3 brands of gasoline. Each brand was used with 7 different cars of the same weight and engine size, under similar operating conditions. The data collected were the miles per gallon obtain for each of the cars.
- Brand A: 19 24 24 21 20 22 25
 Brand B: 25 26 34 25 24 24 23
 Brand C: 25 31 28 29 28 30 28
- a. Identify the most suitable experimental design for this experiment giving justifications. (4 mark)
 - b. What is the model that you will use? (4 mark)
 - c. What is/are the hypothesis (hypotheses) that you intend to test? (4 mark)
 - d. What is/are the test statistic(s) that you will use to test above hypothesis (hypotheses)? (4 mark)

