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## Unit 6 - Week 4

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## Assignment 4

The due date for submitting this assignment has passed. **Due on 2019-08-28, 23:59 IST.**  
As per our records you have not submitted this assignment.

- 1) The “rate of rutting” was measured on 31 experimental asphalt pavements. Four regressor variables were used to specify the conditions under which each asphalt was prepared. The equation used to fit the data was  $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$ . The residual sum of squares for all the possible regressors are given in the table below. “Variables” indicates the variables included in the model; a  $\beta_0$  term is included in all models. **1 point**

analysis (unit?  
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Assignment 4  
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Quiz :  
**Assignment 4**  
(assessment?  
name=87)

Week 5

Week 6

Week 7

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Week 12

**VIDEO  
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Regressors in Model	$SS_{Res}$
None	11.058
$X_1$	0.607
$X_2$	10.795
$X_3$	10.663
$X_4$	1.522
$X_1, X_2$	0.499
$X_1, X_3$	0.600
$X_1, X_4$	0.582
$X_2, X_3$	10.168
$X_2, X_4$	1.218
$X_3, X_4$	1.453
$X_1, X_2, X_3$	0.498
$X_1, X_2, X_4$	0.450
$X_1, X_3, X_4$	0.581
$X_2, X_3, X_4$	1.041
$X_1, X_2, X_3, X_4$	0.441

The value of the coefficient of multiple determination  $R^2$  achieved by the least square fit in the model  $Y = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \epsilon$  is

- 0.722  
 0.988  
 0.853  
 0.945

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
0.945

2) Consider the data in Problem 1. Consider all possible models involving exactly 3-variables. **1 point**  
Based on the values of  $R^2$ , which of the following you prefer most.

- model consists of  $X_1, X_2, X_3$   
  
model consists of  $X_1, X_2, X_4$   
  
model consists of  $X_1, X_3, X_4$   
  
model consists of  $X_2, X_3, X_4$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
model consists of  $X_1, X_2, X_4$

3) Consider the data in Problem 1. The value of Mallows's statistic ( $C_p$ ) for the model  $Y = \beta_0 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$  **1 point**

- 80.25  
 67.25  
 65.25

60.25

No, the answer is incorrect.

Score: 0

Accepted Answers:

60.25

4) Consider the data in Problem 1. The value of Mallows's statistic ( $C_p$ ) for the full model is **1 point**

2

3

4

5

No, the answer is incorrect.

Score: 0

Accepted Answers:

5

5) Consider the data in Problem 1. The value of  $\bar{R}_p^2$  for the model **1 point**  
 $Y = \beta_0 + \beta_1 X_1 + \beta_4 X_4 + \epsilon$  is

0.9678

0.9516

0.9436

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.9436

6) Consider the data in Problem 1. The value of  $\bar{R}_p^2$  for the model **1 point**  
 $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$  is

0.9754

0.7854

0.9516

0.9499

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.9499

7) Consider the data in Problem 1. The value of  $\bar{R}_p^2$  which of the following you prefer most **1 point**

model consists of  $X_1, X_2$

model consists of  $X_1, X_2, X_3$

No, the answer is incorrect.

Score: 0

Accepted Answers:

model consists of  $X_1, X_2$

8) Consider the data in Problem 1. Based on the values of Mallows statistic  $C_p$ , which of the following you prefer most. **1 point**

model consists of  $X_1, X_2, X_3$



model consists of  $X_1$ ,  $X_2$ ,  $X_4$



model consists of  $X_1$ ,  $X_3$ ,  $X_4$

No, the answer is incorrect.

Score: 0

Accepted Answers:

*model consists of  $X_1$ ,  $X_2$ ,  $X_4$*