

Quiz # 4  
Chapter 6 and 7  
**Suggested Answers**  
Group 1  
Econometrics 06216

Name \_\_\_\_\_

Notes:

- Choose the best answer
- You have 5 minutes to solve out this quiz

1. One of the following sentences is true, choose the appropriate
  - a. The type I error occurs when we reject a true null hypothesis
  - b. The type II error occurs when we reject a true null hypothesis
  - c. The type II error occurs when we reject null hypothesis
  - d. The type I error occurs when we fail to reject a false null hypothesis

**Answer a**

2. In the model  $S_i = \beta_0 + \beta_1 I_i + \beta_2 I_i M_i$ , where  $I_i = X_{1i}$  and  $I_i M_i = X_{2i}$ , the variable  $X_{2i}$  is called:

- a. Interaction term, because in this model the change in  $E(S_i)$  resulting from a change in  $I_i$  depends on  $M_i$ , and not vice versa.
- b. Binary variable, because in this model the change in  $E(S_i)$  resulting from a change in  $I_i$  depends on  $M_i$ , and vice versa.
- c. Dummy variable, because in this model the change in  $E(S_i)$  resulting from a change in  $I_i$  depends on the value that takes  $M_i$ .
- d. Interaction term, because in this model the change in  $E(S_i)$  resulting from a change in  $M_i$  depends on  $I_i$  and vice versa.

**Answer d.** This means that  $\frac{\partial S_i}{\partial M_i} = \beta_2 I_i$

3. One of the following is not a Gauss-Markov assumption (in Matrix form)

- a.  $Y = \beta^2 X + \varepsilon$
- b.  $E[\varepsilon \varepsilon^T] = 0$
- c.  $E[\varepsilon \varepsilon^T] = \delta^2 I$
- d.  $E[\varepsilon] = 0$

**Answer b**

4. A good estimator for  $\beta$  is

- a.  $\beta = [X^T X]^{-1} X^T Y$

- b.  $\beta = [X^T X] X^T Y$
- c.  $\beta = [XX^T] X^T Y$
- d. None of the above

Answer d

5. One of the following sentences is *not* true, choose the appropriate
- a. When a regressor is added to a model, the adjusted  $R^2$  can not get lower
  - b. When a regressor is added to a model, the  $R^2$  can not get lower
  - c. When a regressor is added to a model, the adjusted  $R^2$  may get higher
  - d. None of the above

Answer a