

EXAMINATION 3 ANSWER KEY

VERSION A

I. MULTIPLE CHOICE

- | | | | | | |
|--------|-------|-------|--------|--------|--------|
| (1)ba. | (2)a. | (3)b. | (4)c. | (5)b. | (6)a. |
| (7)c. | (8)b. | (9)d. | (10)d. | (11)c. | (12)d. |

II. SHORT ANSWER

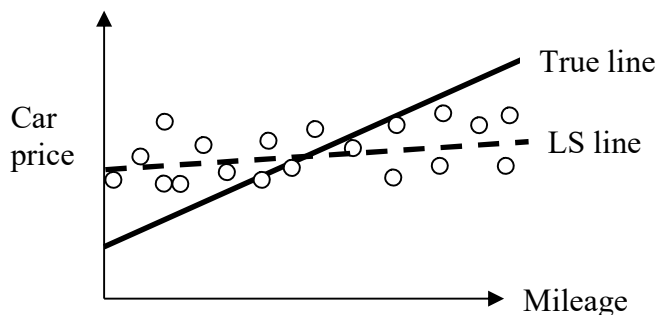
- | | | | | | |
|-----|-----------|-------------|-------------|------------|------------|
| (1) | a. true | b. true | c. false. | | |
| (2) | a. no | b. no | c. yes. | | |
| (3) | a. true | b. false | c. true | d. false. | |
| (4) | a. either | b. decrease | c. increase | d. either. | e. either. |

III. PROBLEMS

- (1) [Analysis of variance table, R^2 , F-test]
 a. 65 b. 5 c. 4.0 d. 0.531 e. 0.5
 f. DOF in numerator=4, DOF in denominator=60, F-statistic=17.0,
 critical point=about 2.53, Yes reject null hypothesis.
- (2) [Dummy variables and structural change]
 a. 33 b. 42 c. 0.3 d. [1] e. [4]
 f. DOF in numerator=2, DOF in denominator=116, F-statistic=35,
 critical point=3.07, Yes reject null hypothesis.
- (3) [Heteroskedasticity]
 a. yes b. no c. positively d. 3.0 e. 3.84
 f. No, cannot reject null hypothesis

IV. CRITICAL THINKING

- a. The least-squares estimate of β_2 is **biased down (closer to zero)** because cars with good mileage often have low horsepower while cars with poor mileage often have high horsepower.
- b.



VERSION B

I. MULTIPLE CHOICE

- (1)a. (2)b. (3)d. (4)b. (5)d. (6)c.
(7)a. (8)b. (9)c. (10)d. (11)b. (12)b.

II. SHORT ANSWER

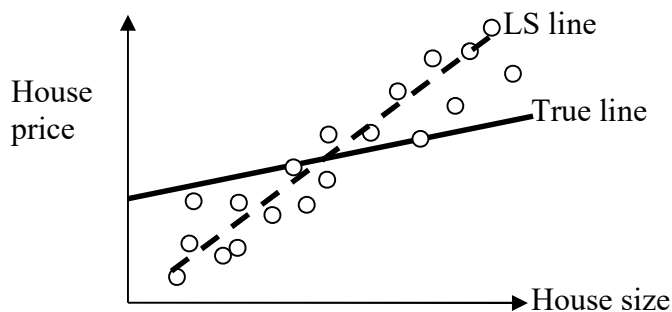
- (1) a. true b. false c. true.
(2) a. no b. yes c. no.
(3) a. false b. true c. false d. true.
(4) a. either b. either c. decrease d. increase e. either.

III. PROBLEMS

- (1) [Analysis of variance table, R^2 , F-test]
a. 126 b. 6 c. 0.33 d. 0.9 e. 0.896
f. DOF in numerator=5, DOF in denominator=120, F-statistic=216.0, critical point=about 2.29, Yes reject null hypothesis.
- (2) [Dummy variables and structural change]
a. 33 b. 42 c. 0.3 d. [1] e. [2]
f. DOF in numerator=1, DOF in denominator=117, F-statistic=7, critical point=3.92, Yes reject null hypothesis.
- (3) [Heteroskedasticity]
a. yes b. no c. negatively d. 9.0 e. 3.84
f. Yes, can reject null hypothesis

IV. CRITICAL THINKING

- a. The least-squares estimate of β_2 is **biased up (too large)** because large houses often have more bathrooms while small houses often have fewer bathrooms.
b.



[end of answer key]