



M.Com. (Semester – II) Examination, April 2018
COC 205 : BUSINESS STATISTICS AND ECONOMETRICS FOR
MANAGERS (OA-18)

Duration : 3 Hours

Max. Marks : 60

Instructions : 1) This paper consists of **nine** questions carrying **equal** marks.

2) Question No. 1 consists of **5 compulsory** questions of **2 marks each**.

3) Answer **any 5** questions from Question 2, 3, 4, 5, 6, 7, 8 and 9.

4) **Each** question carries **10** marks. Figures to the **right** indicate marks.

1. Answer the following short questions in brief : (5×2=10)

- a) What do you mean by Secular Trend ? Give examples.
- b) Write a note on Durbin-Watson Test.
- c) What do you mean by Cluster Analysis ?
- d) Explain coefficient of determination.
- e) Write a note on Sign Test.

2. What do you understand by seasonal indices ? What methods are used to determine them ? 10

3. Explain the methodology of econometrics analysis using suitable example. 10

4. What is heteroscedasticity ? Explain the causes, consequences and remedial measures available for the heteroscedasticity problem. 10

5. Two types of rations are fed to goats. A sample of 11 goats is fed with type of A ration and another sample of 11 goats with type B ration, the gains in weight are recorded below (in pounds) : 10

| | | | | | | | | | | | |
|--------------|----|----|----|----|----|----|----|----|----|----|----|
| TypeA | 31 | 34 | 34 | 29 | 26 | 32 | 35 | 38 | 34 | 29 | 32 |
| TypeB | 26 | 24 | 28 | 30 | 29 | 32 | 26 | 35 | 29 | 32 | 28 |

At 5%, test whether type A ration is better than type B ration.



6. a) A machine is designed to fill 500 ml of milk to polythene bags. A randomly selected 100 milk bags filled by this machine are inspected. The mean milk is found to be 498 ml and S.D. is 10 ml. Is this machine functioning properly at 5% significance level ?

5

b) The mean and standard deviation of marks obtained by 50 students of a college A are 74 and 8 respectively. The mean and standard deviation of marks obtained by 40 students of a college B are 78 and 7 respectively. Is there any significant difference between the mean marks of the students of the two colleges ? Test at 5% significance level.

5

7. The following data represents the number of units of production per day turned out by five different workmen using different types of machines :

10

| Workmen | Machine Types | | | |
|---------|---------------|----|----|----|
| | A | B | C | D |
| 1 | 44 | 38 | 47 | 36 |
| 2 | 46 | 40 | 52 | 43 |
| 3 | 34 | 36 | 44 | 32 |
| 4 | 43 | 38 | 46 | 33 |
| 5 | 38 | 42 | 49 | 39 |

a) Test whether the mean productivity is the same for the four different machine types.

b) Test whether five men differ with respect to mean productivity. (test at 5% significance level).

8. A company's trainees are randomly assigned to groups which are taught certain industrial inspection procedure by three different methods. At the end of the instructing period, they are tested for inspection performance quality. The following are their scores :

10

| Method Type | Scores | | | | | | |
|-------------|--------|----|----|----|----|----|----|
| Method A | 80 | 83 | 79 | 85 | 90 | 68 | |
| Method B | 82 | 84 | 60 | 72 | 86 | 67 | 91 |
| Method C | 93 | 65 | 77 | 78 | 88 | | |

Use Kruskal-Wallis Test to determine at 5% significance level, whether there is any difference in the effectiveness of the three methods.



9. From the data for 46 states in the United States for 1992, Baltagi obtained the following regression results : 10

$$\log \hat{C} = 4.30 - 1.34 \log P + 0.17 \log Y$$

$$se = (0.91) \quad (0.32) \quad (0.20)$$

$$R^2 = 0.27$$

Where C = cigarette consumption, packs per year

P = real price per pack

Y = real disposable income per capita.

- What is the elasticity of demand for cigarettes with respect to price ? Is it statistically significant ?
- What is the income elasticity of demand for cigarettes ? Is it statistically significant ? If not, what might be the reasons for it ?

1. Answer the following short questions in brief :

(5×2=10)

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- Write a note on Durbin-Watson Test.
- What do you mean by Cluster Analysis ?
- Explain coefficient of determination.
- Write a note on Sign Test.

2. What do you understand by seasonal indices ? What methods are used to determine them ?

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3. Explain the methodology of econometrics analysis using suitable examples.

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4. What is heteroscedasticity ? Explain the causes, consequences and remedial measures available for the heteroscedasticity problem.

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5. Two types of rations are fed to goats. A sample of 11 goats is fed with type A ration and another sample of 11 goats with type B ration, the gains in weight are recorded below (in pounds) :

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|--------|----|----|----|----|----|----|----|----|----|----|----|
| Type A | 31 | 34 | 34 | 29 | 26 | 32 | 35 | 36 | 34 | 28 | 32 |
| Type B | 26 | 24 | 28 | 30 | 29 | 32 | 26 | 35 | 29 | 32 | 28 |

At 5% test whether type A ration is better than type B ration.

P.T.O.