

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [BATCH 2017-20]

B.A./B.Sc. FOURTH SEMESTER (January – June) 2019

Mid-Semester Examination, March 2019

Date : 25/03/2019

Time : 2 pm – 4 pm

ECONOMICS (Honours)

Paper : IV

Full Marks : 50

[Use a separate Answer Book for each group]

Group – A

1. Answer the following questions :

- a) Let u_i be the residuals in the least squares fit of y_i against x_i ($i = 1, 2, \dots, n$). Derive the following results: $\sum_{i=1}^n u_i = 0$ and $\sum_{i=1}^n x_i u_i = 0$. (4)
- b) Given data on y and x , explain what functional form you will use and how you will estimate the parameters if you are interested in estimating a constant elasticity of demand function. (4)
- c) In the model $y_i = \alpha + \beta x_i + u_i, i = 1, 2, \dots, N$, the following sample moments have been calculated from 10 observations:

$$\sum y_i = 8 ; \sum x_i = 40 ; \sum y_i^2 = 26 ; \sum x_i^2 = 200 ; \sum x_i y_i = 20$$

Calculate the predictor of y for $x = 10$ and obtain a 95% confidence interval for y for $x = 10$. (2+5)

2. Answer **any two** of the following: [2×5]

- a) In a simple linear regression model with intercept, show that maximum likelihood estimators of the regression parameters are same as the OLS estimators of the parameters. (5)
- b) Explain why, in case of simple linear regression without intercept, R^2 (coefficient of determination) cannot be defined in the way it is defined for simple linear regression with intercept. (5)
- c) Explain why does R^2 increase with the addition of new regressor(s). (5)

Group – B

1. Answer **any three** questions: [3×5]

- a) What are institutions? How do they influence economic development?
- b) Discuss the situations of market failure and provide justification for Government intervention and activities.
- c) In the context of markets in agriculture, discuss credit rationing.
- d) Define the concept of dualism in the context of developing countries.
- e) Discuss the concepts of surplus labor and disguised unemployment.

2. Answer **any one** question: [1×10]

- a) What do you mean by the economic role of Government in the context of economic development? What are the major reasons behind Government failure?
- b) i) In the context of the Lewis model, describe the following concepts-family farming, capitalist farming. (2.5+2.5)
- ii) Why can the Lewis model be considered a classical model? Discuss. (5)

TABLE IV *t*-DISTRIBUTION*Values of $t_{\alpha, \nu}$

$\alpha \backslash \nu$	0.05	0.025	0.01	0.005
1	6.314	12.706	31.821	63.657
2	2.920	4.303	6.965	9.925
3	2.353	3.182	4.541	5.841
4	2.132	2.776	3.747	4.604
5	2.015	2.571	3.365	4.032
6	1.943	2.447	3.143	3.707
7	1.895	2.365	2.998	3.499
8	1.860	2.306	2.896	3.355
9	1.833	2.262	2.821	3.250
10	1.812	2.228	2.764	3.169
11	1.796	2.201	2.718	3.106
12	1.782	2.179	2.681	3.055
13	1.771	2.160	2.650	3.012
14	1.761	2.145	2.624	2.977
15	1.753	2.131	2.602	2.947
16	1.746	2.120	2.583	2.921
17	1.740	2.110	2.567	2.898
18	1.734	2.101	2.552	2.878
19	1.729	2.093	2.539	2.861
20	1.725	2.086	2.528	2.845
21	1.721	2.080	2.518	2.831
22	1.717	2.074	2.508	2.819
23	1.714	2.069	2.500	2.807
24	1.711	2.064	2.492	2.797
25	1.708	2.060	2.485	2.787
26	1.706	2.056	2.479	2.779
27	1.703	2.052	2.473	2.771
28	1.701	2.048	2.467	2.763
29	1.699	2.045	2.462	2.756
30	1.697	2.042	2.457	2.750
40	1.684	2.021	2.423	2.704
60	1.671	2.000	2.390	2.660
120	1.658	1.980	2.358	2.617
∞	1.645	1.960	2.326	2.576

*Abridged from Table 12 of *Biometrika Tables for Statisticians*, Vol. I, with the kind permission of the Biometrika Trustees.