

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, DECEMBER 2015

THIRD YEAR [BATCH 2013-16]

ECONOMICS [Hons]

Paper : V

Date : 14/12/2015

Time : 11 am – 3 pm

Full Marks : 80

[Use a separate Answer Book for each Group]

Group - A

Answer any three questions

1. Consider the general linear model $Y = x\beta + \epsilon$. State the assumptions that are necessary to estimate β by applying OLS. Prove that OLS estimates of β are BLUE. [10]
2. The following fitted multiple regression equation is used to estimate the trade-off between time spent in sleeping and working (standard errors are in parenthesis), where sleep and totwrk (total work) are measured in minutes /week, and educ (education) and age are measured in years :
$$\text{sleep} = 3638 \cdot 25 - 0 \cdot 148 \text{ totwrk} - 11 \cdot 13 \text{ educ} + 2 \cdot 20 \text{ age}$$

(11228) (00167) (588) (145)

Number of observations = 44, $R^2 = 0 \cdot 1134$

 - a) How would you interpret the coefficient of totwrk? [1]
 - b) If someone works five more hours / week, by how many minutes is sleep predicted to fall? [2]
 - c) Are educ and age individually significant at 5% level against respective two sided alternatives? Show your work. [4]
 - d) Carry out the overall test of significance (i.e. H_0 : All the slope coefficients are simultaneously equal to zero ag. H_1 : Not all slope coefficients are simultaneously zero) for the fitted regression above. [3]
3. Consider the consumption function : $C_t = \alpha + \beta Y_t + u_t$ where C_t is aggregate consumption expenditures in India and Y_t is disposable income, both in rupees. u_t is the random error $\sim N(0, \sigma^2)$. Suppose you have annual data from 1920 to 1997. Further suppose that you believe the post-independence (after 1947) consumption function is likely to be different from the pre-independence function.
 - a) Describe how you would specify a model that allows you to test whether the intercept alone is affected in the post-independence time period. What test statistic do you use to test this? Explain the test procedure. [5]
 - b) How do you include dummy variables if you believe that both the intercept and the slope parameters are affected differently in the pre-vs post-independence period? What test statistic do you use to see if the slope is affected in the post-independence era? [5]
4.
 - a) Distinguish between slope dummy and intercept dummy. Describe both of these concepts using a suitable example. [5]
 - b) Explain the problems associated with modelling dependent dummy variable using linear probability model. [5]
5.
 - a) Explain the concept of multicollinearity. What are the consequences of presence of multicollinearity in a simple linear regression model? How the concept of VIF can be used to detect the concept of multicollinearity? [2+1+2]
 - b) Explain why it is important to have $(m - 1)$ dummy variables in case a qualitative variable has m categories in the regression set up involving intercept. [5]

Group – B

6. Write short notes on **any two** of the following : (2 × 4)
 - a) Policy of 'Controlled Expansion'.
 - b) Role of SEBI in Indian securities market.
 - c) Distinction between Gross NPA and net NPA.
7. Answer **any one** question of the following : (1 × 7)
 - a) Discuss the major changes in the structure of direct taxes in India in the post-reform period.
 - b) State in brief the movements of factor services between nations as per the provisions of GATS. Analyse their impact on India's service trade. (3 + 4)
8. Answer **any one** question of the following : (1 × 15)
 - a) Discuss some of the major reforms undertaken in the Indian banking sector since the introduction of economic reforms in the early 1990s. Mention the impact of all these reforms on the performance of banking sector in the country. (9 + 6)
 - b) Explain the need for the FRBM Act in managing public expenditure and establishing fiscal discipline in India during post-reform period. Also indicate the impacts of global economic crisis since 2007 on this legal step taken by the Government of India. (9 + 6)
9. Answer **any two** questions of the following : (2 × 8)
 - a) Discuss the major debates around the policy of 'Operation Barga' in West Bengal during 1970s.
 - b) Discuss the problems of industrialization in West Bengal.
 - c) Mention the factors that explain the industrial growth in West Bengal after 1990s.
10. Answer **any one** question of the following : (1 × 4)
 - a) Discuss in brief the major structural breakthrough in the growth of NSDP of West Bengal in 1980s.
 - b) How can the HDI, as estimated in the West Bengal Development Report (2004), be used to reflect attainments with regard to health and education in West Bengal?

TABLE IV t-DISTRIBUTION*

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

TABLE V F-DISTRIBUTION*

Values of $F_{0.05; v_1, v_2}$

$v_1 \backslash v_2$	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	254.3
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.12	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.99	1.94	1.89	1.84	1.79	1.73
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

For other values of v_1 and v_2 , one may use linear interpolation, taking $1/v_1$ and $1/v_2$ as the independent variables.