

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086
(For candidates admitted from the academic year 2023 – 2024 & thereafter)

B. A. DEGREE EXAMINATION, APRIL 2026
BRANCH IV - ECONOMICS
FOURTH SEMESTER

COURSE : ALLIED CORE
PAPER : INTRODUCTORY ECONOMETRICS
SUBJECT CODE : 23EC/AC/EM45
TIME : 3 HOURS **MAX. MARKS: 100**

Q. No.	SECTION - A PART – A	CO	KL
	Answer all TEN questions in about 50 words each. (10 x 2 = 20)		
1	Define Econometrics.	1	1
2	Why is the error term (ui) included in regression model?	1	1
3	Define Endogenous variables.	1	1
4	Explain the concept of Type I and Type II errors in hypothesis testing.	1	1
5	Expand BLUE.	1	1
6	What is PRF and SRF?	1	1
7	Define Stochastic Disturbance Term (u _i).	1	1
8	What is the standard error of a regression model?	1	1
9	What do you mean by dummy variable trap?	1	1
10	What is the meaning of the term “Linear” in classical linear regression model?	1	1
Q. No.	PART – B	CO	KL
	Answer any TEN questions out of TWELVE in about 50 words each. (10 x 2 = 20)		
11	What is the primary difference between deterministic and a stochastic relationship?	2	2
12	Differentiate between Stochastic disturbance term and residual error term.	2	2
13	Distinguish between endogenous and exogenous variable.	2	2
14	State the meaning of confidence interval	2	2
15	Why must we use (m-1) dummy variables if a qualitative variable has m categories?	2	2
16	What is the purpose of testing for Structural Stability in regression?	2	2
17	What is the role of interaction effects when using dummy variables?	2	2
18	What is spurious regression?	2	2
19	Bring out the difference between a composite hypothesis and a simple hypothesis	2	2
20	Bring out the properties of a mathematical model	2	2
21	When do you use hypothesis testing?	2	2
22	What is a specification bias?	2	2
Q. No.	SECTION - B PART – A	CO	KL
	Answer any FOUR questions out of SIX in about 250 words each. (4 x 5 = 20)		
23	Explain the steps involved in the testing of statistical hypotheses.	3	3

24	Calculate the value of r^2 if the ESS is 850 and the TSS is 1000, and interpret the results.	3	3														
25	Show how dummy variables can be applied to compare the wage levels of “Urban” vs “Rural” workers.	3	3														
26	Given $\sum X=1700$; $\sum Y=1110$; $\sum X^2=322000$; $\sum Y^2= 132100$; $\sum XY= 205500$; $N=10$. Find the regression equation of Y on X and X on Y.	3	3														
27	Explain how to transform a Cobb-Douglas production function into a linear model for OLS estimation.	3	3														
28	Analyze the relationship between coefficient of determination (R^2) and F-Statistic used in testing the overall significance of the model.	3	3														
Q. No.	PART – B Answer any FOUR questions out of SIX in about 250 words each. (4 x 5 = 20)	CO	KL														
29	Explain the use of the reciprocal model in estimating the Phillips Curve.	4	4														
30	Discuss the assumptions underlying the classical Linear Regression Model.	4	4														
31	If the demand function is estimated as $\ln Q=4.5-0.80\ln P$, what is the price elasticity of demand? Is it elastic or inelastic? Interpret the results.	4	4														
32	Examine the role of the Coefficient of Determination (r^2) in evaluating the “Goodness of Fit”.	4	4														
33	From a sample of 528 persons a dummy variable regression model is developed as $Y_i = \beta_1 + \beta_2 D_{2i} + \beta_3 D_{3i} + u_i$ and the following regression results were obtained: $\hat{Y}_i = 8.8148 + 1.0997 D_{2i} - 1.6729 D_{3i}$ $Se = (0.4015) \quad (0.4642) \quad (0.4854)$ $t = (21.9528) \quad (2.3688) \quad (-3.4462)$ $(0.0000)^* \quad (0.0182)^* \quad (0.0006)^*$ $R^2 = 0.0322$; Where Y = hourly wage (in \$) ; D2 = married status, 1 = married, 0 = otherwise D3 = region of residence; 1 = South, 0 = otherwise ; * denotes the p-values. What is the implication of the intercept term here? Interpret the regression results with all essential details.	4	4														
34	Explain the simultaneous equation Bias with a suitable example.	4	4														
	SECTION - C Answer any TWO questions out of FOUR in about 600 words each. (2 x 10 = 20)	CO	KL														
35	State and prove Gauss Markov theorem.	5	5														
36	Discuss the methodology of Econometrics using a real world example.	5	5														
37	Evaluate the various functional forms of regression models and provide economic theories that justify each.	5	5														
38	Calculate the relevant equation for the following sample data: <table border="1" style="margin-left: 20px;"> <tr> <td>Price of A</td> <td>50</td> <td>70</td> <td>78</td> <td>89</td> <td>110</td> <td>120</td> </tr> <tr> <td>Quantity of A</td> <td>164</td> <td>159</td> <td>140</td> <td>100</td> <td>70</td> <td>65</td> </tr> </table> Estimate the average price elasticity of demand. Is the model statistically significant? *F critical Value – 7.71	Price of A	50	70	78	89	110	120	Quantity of A	164	159	140	100	70	65	5	5
Price of A	50	70	78	89	110	120											
Quantity of A	164	159	140	100	70	65											

