DOON UNIVERSITY, DEHRADUN
Final Semester Examination, 2015
Department of Economics
M.Sc. Seventh Semester
SSEI-512: Econometric Theory

Time Allowed: 3 hrs.   *Max. Marks: 50*

Note: Attempt All Questions from Sections A,B,C.

SECTION : A
All questions are compulsory and carry equal marks.

(Marks: 10x1=10)

1. Using appropriate equations give examples from economic theory for each of the following that shows the use of dummy variables
   a) As proxies to qualitative factors
   b) As proxies to numerical factors
   c) For measuring shift of a function over time
   d) For measuring the change of parameters over time
   e) As proxies for the dependent variable.

2. The probability for underlying Logit Model is _____ distribution.
3. Profits of a firm depend on the current sales and past period (t-1) sales of the firm. This is an example of a _____ model.
4. When Y (dependent variable) depends on current and previous time period error term, it is a _____ model.
5. Tobit model is also called censored model because _____
6. Name the model that was applied to study consumer non-durables. Who developed this model?

SECTION : B
Answer any FOUR.   *(Marks: 4x5=20)*

1. Define an intrinsically linear and an intrinsically non-linear regression model. Using appropriate equations differentiate between an intrinsically linear and an intrinsically non-linear Cobb-Douglas production function.
2. Briefly explain the reasons for lags in economics.
3. Write short notes on any two
   a) Multicollinearity
   b) Heteroscedasticity
   c) Autocorrelation
4. Outline the various steps of the method of instrumental variables and illustrate the method using a model with one explanatory variable.
5. State the Taylor's Theorem. Using Taylor's series linearize the following non-linear function $Y = b_1 e^{b_2 X_i}$ assuming $b_1^* = 0.45$ and $b_2^* = 0.01$

SECTION : C

Answer any TWO. (Marks: 2x10=20)

1. Given that
$$Y_t = a_0 + b_0X_t + b_1X_{t-1} + b_2X_{t-2} + \ldots\ldots + u_t$$
Assuming that the lag co-efficients are declining continuously following a pattern of a geometric progression, obtain the transformed form of the given model.

2. Given is the following demand and supply model together with the market clearing condition
$$Q_d = a_0 + a_1P + u_1$$
$$Q_s = b_0 + b_1P + u_2$$
$$Q_d = Q_s$$
Explain the estimation of the given model under different conditions of demand and supply. *(Hint: identification of simultaneous models)*

3. Explain the Autoregressive (AR), Moving Average (MA), Autoregressive and Moving Average (ARMA) and the Autoregressive Integrated and Moving Average (ARIMA) process to forecasting based on time series data. (Use appropriate models to support your answer.)

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