

M.E./M.TECH. Degree Examination, December2020
Second Semester
NW18009-Data Analytics and Business Intelligence
(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Which of the following metrics can be used for evaluating regression models?
a) R Squared b) Adjusted R Squared c) F Statistics d) RMSE / MSE / MAE
2. Function used for linear regression in R is _____
a) lm(formula, data) b) lr(formula, data) c) lrm(formula, data) d) regression linear(formula, data)
3. Select the valid reasons for using simulation.
a) Relationship between the variables is nonlinear b) Optimized solutions are obtained
c) Conduct experiments without disrupting the real system d) Answers 1 and 3
4. Which of the following is not a measure of the fit of a multilevel model?
a)CIC b)AIC c) CAIC d)BIC
5. Differentiate response variable from predictor variable
6. How does probit model differ from logistic-binomial model?
7. How do you calculate coefficients of estimates without predictors?
8. Write the general notation for Multilevel data model and prediction?

PART B - (4 X16 = 64 marks)

09. (a) Consider the following scenario. Given table shows the temperatures of US cities in (16)
the early afternoon of October 9, 2015.

Temperature °C	0	10	20	30	40	50	60	70	80	90	100
Temperature °F	32	50	68	86	104	122	140	158	176	194	212

- 1) Write R code to fit the linear transformation model.
- 2) Determine whether the transformation is linear or not.
- 3) Draw scatter plot.

(OR)

- (b) (i) Consider the following scenario. (16)
A rabbit was injected with a virus and “x” hours after the injection the temperature “y” (in degrees Celsius) was measured. The data is in the table below.

Elapsed Time (x)	24	32	48	56
Temperature (y) (C°)	39.3	40.3	41.4	41.7

- 1) Construct a linear regression model.
 - 2) Write R code to fit the linear regression model.
 - 3) Determine whether the transformation is linear or not.
 - 4) Draw scatter plot.
 - 5) Estimate the rabbit's temperature 40 hours after the injection
10. (a) Explain the Logistic regression model and its various evaluating coefficients with suitable example. **(16)**
- (OR)**
- (b) Explain the Logarithmic model for the prediction of child height from parent height with suitable R code. **(16)**
11. (a) (i) Implement probability models using R **(8)**
(ii) What are group level predictors? Illustrate with a R code. Differentiate fixed effects and random effects **(8)**
- (OR)**
- (b) Write a suitable R code for implementing time series analysis. **(16)**
12. (a) How power is calculated for fake-data Simulation? **(16)**
- (OR)**
- (b) Write a R code to implement Multilevel generalized linear model with a case study **(16)**