VIT
Vellore Institute of Technology

Winter Semester 2018-19

Continuous Assessment Test – I I

Programme Name & Branch: B. Tech(common).

Course Name & Code: Statistics for Engineers – MAT2001

Slot: B1 +TB1

Exam Duration: 90 minutes

Maximum Marks: 50

Answer All the Questions (5 × 10 = 50)

Use of statistical tables permitted

S. No.	Question	Marks
1.	An experiment was conducted to determine if the weight of an nimal can be predicted after a given period of time on the basis of the initial weight of the animal and the amount of feed that was eaten. The following data, measured in kilograms, were recorded:	

Final Weight, y	Initial Weight, $x1$	Feed Weight, $x2$
95	42	272
77	33	226
80	33	259
100	45	292
97	39	311
70	36	183
50	32	173
80	41	236
92	40	230
84	38	235

(a) Fit a multiple regression equation of the form $Y = \beta 0 + \beta 1\, x1 + \beta 2\, x2$.

(b) Predict the final weight of an animal having an initial weight of 35 kilograms that is given 250 kilograms of feed.

10

2. The finished inside diameter of a piston ring is normally distributed with a mean of 10 centimeters and a standard deviation of 0.03 centimeter.

(i) What proportion of rings will have inside diameters exceeding 10.075 centimeters?

(ii) Below what value of inside diameter will 15% of the piston rings fall?

10

3. In a certain city, the daily consumption of electric power, in millions of kilowatt-hours, is a random variable X having a gamma istribution with mean $\mu = 6$ and variance $\sigma^2 = 12$.

(i) Find the values of α and β.

(ii) Find the probability that on any given day the daily power consumption will exceed 12 million kilowatt hours.

10

4. 500 articles from a factory are examined and found to be 2% defective. 800 similar articles from a second factory are found to have 1.5% defectives. Can it be reasonably concluded that the products of the first factory are inferior to those of the second, at 5% los? 10

5. A certain intelligence test was administered to a large group of students and it has been found that the SD of the score is 36. The test is given to a group of 120 boys and they got an average score of 124. Another group of 125 girls to whom also the test was given scored an average of 130. Does this show any significant difference between the groups, at 5% los? 10