

Roll No.....

II BE CLASS TEST-I AUG 2023
Computer Engineering
3ACRC1 Applied Mathematics-III

Time-70 mins.

Maximum Marks [20]

Note-Attempt all the questions.

Q.1 Find a real root, correct to four places of decimal, of the equation-

$$\ln(2x^2 + 3) - 3e^{-x}\cos x - 2 = 0$$

using bisection method, iterating 8 times.

[5]

Q.2 The electric power $X(Kw)$ consumed each month by a chemical plant is thought to be related to the ambient temperature $Y(^{\circ}C)$ and the number of working days Z in the month. The past year's historical data are available and are presented in the following table-

X	87	93	95	88	94	98
Y	72	78	83	70	79	85
Z	25	28	23	29	26	30

Find the number of working days corresponding to the consumption $X = 87Kw$ and the ambient temperature $Y = 77^{\circ}C$.

[5]

Q.3 Let X be a continuous random variable with pdf given by-

$$f(x) = \begin{cases} kx, & 0 \leq x < 1, \\ k, & 1 \leq x < 2, \\ -kx + 3k, & 2 \leq x < 3 \\ 0, & \text{elsewhere} \end{cases}$$

Determine (i) the constant k (ii) the cdf (iii) $P(0.75 < X < 1.65)$ using both pdf and cdf.

[5]

Q.4 Most graduate schools of business require applicants for admission to take the Graduate Management Admission Council's GMAT examination. Scores on the GMAT are roughly normally distributed with a mean of 547 and a standard deviation of 102.

[5]

(i) What is the probability of an individual scoring above 450 on the GMAT?

(ii) What is the highest score of an individual scoring below top 10% on the GMAT?

(iii) What is the least score of an individual on the GMAT scoring in the highest 2%?