Test-4 (PR-B.Tech)

Period: 2 Hrs Marks: 20

Note: All questions to be solved.

1. $A = \nabla\nabla E(w)$ is known as the _____. Here m_N is given by _____.

Ans: Hessian Matrix , $m_N = \beta A^{-1}\Phi^T \mathbf{t}$. (2)

2. Minimization of the regularized error function is equivalent to minimizing the _____ subject to the _____. (2)

Ans: unregularized sum-of-squares error, constraint

3. By making use of the result (2.115) to evaluate the integral in (3.57), verify that the predictive distribution for the Bayesian linear regression model is given by (3.58) in which the input-dependent variance is given by (3.59). Refer Bishop. (3)

4. Consider a linear basis function model for regression in which the parameters α and β are set using the evidence framework. Show that the function $E(m_N)$ defined by (3.82) satisfies the relation $2E(m_N) = N$. (Refer Bishop). (3)

5. Write a Programme to generate the approximation of the random signal using Bayesian Regression Model. (10)