Test-3(B.Tech PR) (Mixed Mode)

Duration: 1.5Hrs Marks:10

Q.No.1 limitation of the Gaussian distribution is that it is intrinsically _____.
Ans: unimodal

Q.No.2 An important property of the multivariate Gaussian distribution is that if two sets of variables are jointly Gaussian, then the conditional distribution of one set conditioned on the other is _____.
Ans: Gaussian

Q.No.3 A periodic generalisation of the Gaussian called the _____.
Ans: *von Mises* distribution.

Q.No.4 A-prior distribution, called a *non-informative prior*, which is intended to have as little influence on the _____.
Ans: posterior distribution as possible

Q.No.5 The histogram method has the property that, once the histogram has been computed, the data set itself can be discarded, which can be advantageous if, _____
Ans: the data set is large

Q.No.6 Evaluate the Kullback-Leibler divergence (1.113) between two Gaussians $p(x) = N(x|\mu, \Sigma)$ and $q(x) = N(x|m, L)$ (Refer Bishop for equation)

Q.No.7 Consider two multidimensional random vectors x and z having Gaussian distributions $p(x) = N(x|\mu_x,\Sigma_x)$ and $p(z) = N(z|\mu_z,\Sigma_z)$ respectively, together with their sum $y = x+z$. Use the results (2.109) and (2.110) to find an expression for the marginal distribution p(y) by considering the linear-Gaussian model comprising the product of the marginal distribution p(x) and the conditional distribution p(y|x). (Refer to Bishop for equations)

Q.No.8 Evaluate the mean, variance, and mode of the gamma distribution

Q.No.9 Assume that the target variable t is given by a deterministic function y(x, w) with additive Gaussian noise with zero mean . Compute W_{ml} estimate for this regression problem.

Q.No.10 The difference between the Batch and Sequential Learning techniques is. _____.