

# SMAI-M20-04: Review Questions

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beginframeReview Question - I (one, none or more correct)

Confusion matrix is:

(a) Square (b) Always Diagonal (c) Can never be diagonal (d) Can be diagonal (e) Always Symmetric (f) Can never be symmetric (g) Can be Symmetric

## Review Question - II (one, none or more correct)

$$\frac{TP}{P}$$

is known as:

(a) Accuracy (b) Precision (c) Recall (d) None of the above

## Review Question - III (one, none or more correct)

A disease occurs with a probability of 0.4 (i.e., it is present in 40% of the population). You have a test that detects the disease with a probability 0.6, and produces a false positive with probability of 0.1. What is the (posterior) probability that the test comes back positive.

Hint:  $S$  is the event that you are sick;  $P$  is the event that test comes positive.

$$P(S|P) = \frac{P(P|S)P(S)}{P(P)} = \frac{P(P|S)P(S)}{P(P|S)P(S) + P(P|\bar{S})P(\bar{S})}$$

(a) 0.6 (b) 0.7 (c) 0.8 (d) 0.9 (e) 0.95

## Review Question - IV (one, none or more correct)

Two SMAI students (Raju and Sheela) worked on the same problem with the same measurements/features and samples, except that their feature orderings were different. (i.e.,  $\mathbf{x}$  and  $\mathbf{x}'$  were permutations.) Identify correct statement(s).

- (a) Both got the same accuracy with KNN (same K and Eucli. distance)
- (b) Both got different accuracy with KNN (same K and Eucli. distance)
- (c) Their confusion matrices were different i.e., elements (cells) were swapped.
- (d) Both had the same Covariance Matrices (Hint:  $\Sigma = \frac{1}{N} \sum_{i=1}^N [\mathbf{x}_i - \mu][\mathbf{x}_i - \mu]^T$ )
- (e) Both had covariance matrices of the same Rank.
- (f) Both had covariance matrices where cells (elements) were swapped.