ITC MODULE1: List of Topics

1. Basics of Probability
2. Self Information - definition, formula and problems; and concept of uncertainty
3. Entropy - definition, formula and problems
4. Channel Diagram and description
5. Information Rate definition and problems
6. Channel Matrix - definition, formula and problems
7. Definition of DMS (Discrete Memoryless Source)
8. Special Channels (description and numerical problems)
    - Lossless Channel
    - Deterministic Channel
    - Noiseless Channel
    - Symmetric Channel
    - Uniform Channel
    - Binary Channel
    - Binary Symmetric Channel
    - Binary Erasure Channel
9. Cascaded Binary Channels(description and numerical problems)
10. Channel Capacity definition and numerical problems
11. Shannon's Theorem for capacity with definition and numerical problems
12. Mutual Information and its Properties
13. Priori and post priori entropy
14. Equivocation
15. Calculation of P(Y), P(X|Y), P(Y|X), P(X,Y)
16. Bayes Rule
17. Calculation of H(X), H(Y), H(Y|X), H(X|Y) , H(X,Y), I(X:Y)

Proofs:-

1. Relation between Conditional Entropy, Joint Entropy and Marginal Entropy
2. Mutual Information and Entropy

NOT Included:

1. Chain rule for entropy
2. Markov chain
3. Muruga's method