

Tutorial-1

1. If P represents 'This book is good' and Q represents 'This book is cheap', write the following sentences in symbolic form:
 - (a) This book is good and cheap.
 - (b) This book is not good but cheap.
 - (c) This book is costly but good.
 - (d) This book is neither good nor cheap.
 - (e) This book is either good or cheap.
2. Construct the truth table for $\alpha = (P \vee Q) \rightarrow ((P \vee R) \rightarrow (R \vee Q))$.
3. Show that $(P \wedge Q) \vee (P \wedge \neg Q) \equiv P$.
4. Obtain a disjunctive normal form of $P \vee (\neg P \rightarrow (Q \vee (Q \rightarrow \neg R)))$
5. For a given formula α , the truth values are given in the Table below. Find the principal disjunctive normal form.

| P | Q | R | α |
|-----|-----|-----|----------|
| T | T | T | T |
| T | T | F | F |
| T | F | T | F |
| T | F | F | T |
| F | T | T | T |
| F | T | F | F |
| F | F | T | F |
| F | F | F | T |