3 (a) Give examples for each of the following :

(i) notations of textual substitution

(ii) precedence of textual substitution

(iii) textual substitution is left associative

(iv) textual substitution and hidden variables

(v) substitution for several variables

(vi) functional application and textual substitution.

6×2=12

(b) Perform following textual substitutions.

(i) $x + y \cdot x[x, y := b + 2, x + 2]$

(ii) $(x + x \cdot y + x \cdot y \cdot z)[x, y := y, x]$

(iii) $(x + x.2)[x, y := x, z][x := y]$

1+1.5+1.5=4

UNIT - IV

4 (a) Define first order predicate logic.

4

(b) What do you understand by unification and resolution ?

6+6

OR

4 (a) Code the following facts and rules in Prolog. Facts are :

- Database is an easy course
- AI and Hardware are not easy courses
- Books for Hardware and Database are available
- AI has 8 credits with no lab component.

Rules are :

- A student takes course Y if Y is easy and books for Y are available.
- A student takes course Y if Y has 8 credits and Y has lab component.

8+4=12

(b) Demonstrate the use of following predicates in Prolog :

(i) cut

(ii) fail

4