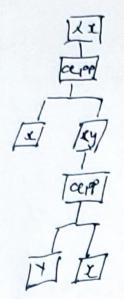
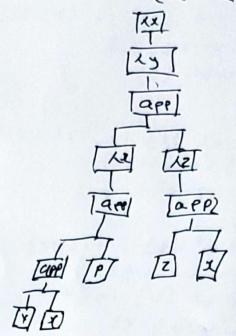
1. a) (ex. (a (24. (ya)))

b) (2x. (2y. ((1x. (cxx) p))) (d (1x. (2x)))))





2. a) ((2p.(pz)) (1q.(w(1w.((((wy)z)p)))))))))))))))))

3. a) Lis bounded to variable Sqq, Hence closed variables are 5 and q. Free

Variable is Z

So, S bound at dsf in Ls. sz Lq. sq

S free at 6sg in Ls. sz Lq. sq

in Lq. 6sgq

in Ls. s {z}

Z free at fzz in Ls. s {z} Lq. sq

in Ls. s {z}

y bound at fez in Ls. s z Lq. se

in Lq. Sq

n Lq. Sq

n Lq. Sq

n Lq. Sq

-. LS.SZ 29.Sq - (LS.((SZ)(Lq.(Sq))))

Free Free

Free

```
3. b) s bound at fsz in (25.52) sq. w/wwwgzs
       S free at SSY in CAS.SZ) 29. w. Lw. wazs
       in Lq. w Lw. wg 2554
       in KW. W92 554
       in osy
       2 Free at {z} in (15.5z)/quhwwars
       in (45 5 22 3 2 . 1 { 2}
       in Lw. woodz35
        infely
        a bound at fay infissz) Lq. when. wgzs
        in lq.wlw.wgzs
        a free at for ingks. 523 29. w 2 w. w. 293 25
        in Lw. w. 29,25 25
        in for 3
         w bound at fuzz in (15.52) kg. w/w. wgZs
         in Lw.wg,25
         w free at fuz in (15.52) 19. Swy Lw. wg25
         in 19. dwg Lw. wgzs
         in La Suz
                                          bb Pres
          ind was
       -- (15.52) /q. w Lw. w 9,75 → ((15.(52)) (19.(w(1w.
                                           ((((wg)z)s))))))
                                                   free free
 4. a) (12.2) (12.22) (12.29)
      Breduction: (12.22) (12.29)
                    (LZ.Zg) (LZ.Zg)
                   (12.29) q
                    9 9
```

4. b) (15.19.599) (19.9) 9 (Lq.(12.9)99)9 (ly. (la.a) 29) 91 Caadag 99

> C) (15.85) (19.9) (19.9) (29.9) (199) (9.9) (19.4)(19.9) (lq.9)

5. a) AND FALSE TRUE

= (161, 1620b) BZ FOUSE) FALSE TRUE

(Kb2 (1x. 24, 4) 62 Falce) (La. Ly. x) = FAISE TRUE FALSE

(La, Ly.y) (la, Ly, 2) Follo

(Ly.y) False = FALSE

False

(x62.62.14.x)62.(1x.14x)) 6) AND TRUE TRUE (12.ky.2)

= (Kb1. Lb2. b1 b2 FALSE) TRUE TRUE

(Laty. x) (Lx.ly. x) = TRUE TRUE FALSE

(lxly.x) = TRUE

(LI.Ly.x) True