DYdUfh a Ybh cZ C \ Y a]ghfm Cc``Y [Y cZ Afhg UbX SW]YbWYg

FUW i`hm

7**U**^{*}**YgA**. **6UXk**]**b** (1-+0, 1, 1-, ,). C.D UbX9j Umb < Ua a cbgI b]j YfglmDfcZýggcf cZDfY-A YX]W/ Gi X]Yg 6.5., I b]j YfglmcZ7cfdi g 7\f]glj/D\.8., HM Ug HWV I b]j Yfglmz77\Ya : FG7. 5XX]HcbU gli XmI b]j YfglmcZHM Ug GLbZcfXI b]j Yfglm=a dYf]U 7c``Y[Y(@cbXcb).

 $GU`m5. < Ybf]Y(1--,). DfcZyggcf cZ7 \ ya]gfm6.G, I b]j YfglmcZ5 f]ncbU/D \ .8., Gci h 8U_cHUGHHYI b]j Yfglm and the set of the s$

 $\label{eq:constraint} \textbf{7Uc} ~ @\textbf{Yg}] \textbf{Y}(1-,) \ b. 5 \ ggc \ \textbf{W} \ \textbf{U} \ \textbf{Y} \ \textbf{D} \ \textbf{fc} \ \textbf{Z} \ \textbf{Y} \ \textbf{g} \ \textbf{fm} \ \textbf{6.G}, \ \textbf{I} \ \textbf{b} \ \textbf{j} \ \textbf{Y} \ \textbf{g} \ \textbf{fm} \ \textbf{c} \ \textbf{Z} \ \textbf{H} \ \textbf{b} \ \textbf{Y} \ \textbf{g} \ \textbf{Y} \ \textbf{U} \ \textbf{A} \ \textbf{U} \ \textbf{h} \ \textbf{b} \ \textbf{J} \ \textbf{f} \ \textbf{g} \ \textbf{fm} \ \textbf{c} \ \textbf{Z} \ \textbf{K} \ \textbf{c} \ \textbf{c}$

A Uf nb BYk \ ci gY(1--2). 5 ggc V/UYDfc Z/ggcf cZ7 \ Ya]gfmA .5. UbX 6.G9X, B cfh Yfb 5 f]ncbUI b]j Yfglm/8.5., A]XX YHbbYggYY CUHYI b]j Yfglm

A JWUY F. GUUHLF (2001). 5 ggcVJUHYDfcZ/ggcf cZ7\Ya]gfm6.G, BYk AYI JW/GHHYI b|j Yfglm/D\.8., I b|j Yfglm cZI H\/5XX]HcbU gli Xm@cg5`Ua cg@U/cfUrcfm

Ciff]Wi`ia

55

- i httw://www.uhh.yyYa Ybh.fmcfgWvbXufmgWcc``YjY,
- ; dfYdUFYhc YbhYf U\YUh\gMYbWdfcZYgg|cb gi W Uga YX]MbY, XYbhJgfma YX]W hWbc`c[md\Ufa UMmbi fg]b[, d\ng]W h\YfUdmcf ch\Yf U`]YX\YUh\ÚYXg
- ¡ VYWa YUdfcZYgglcbU/]bXi gff]U WYa]gh.cf
- Woblibi Ygli Xmlb WYa lglfmUhh Y [fUXi UhY Yj Y.

Ghi XYblg di fgi]b[Ua Ucf]b 7\Ya]gfma i ghWa d`YhYA Uh 211, 212/D\ng/Wg 231, 232, UbXa YYhh\YZc``ck]b[fYei]fYa Yblg]b 7\Ya]gfm

- = A Ucf b 7 Ya gfm i 46 ci fg
 - 5. 7<9111, 112, 211, 221, 31(, 31), 31+, 31, , 31-, 32(, 32*, 32+, 33), (-,
 - 6. FYgYUfW, 3\ci fgZfca . (2(cf (2)
 - 7. CbYcZ (0), (30, (3)
- = A Ucf]b A YX]W HWbc`c[m@YUX]b[hc h Y6G]b A YX]W HWbc`c[m
 - 5. 7\Ya]gfm111, 112, 211-21, 31(-1), 31-, 32(, 32*
 - 6. 6]c`c[m112, 211, 221, 222, 31), 31*, 320
 - 7. D\ngWg213-21(cf 231-232
 - 8. 7ca di htf GM/MbW (3\ci fg) UbXA 5H111 cf df YZAfUV mA 5H211
 - 9. 5 a]b]a i a cZ33\ci fgcZA YX]W/ HYWbc`c[mLhUb UZÚ]UhX\cgd]HU Ugh\YZci fh\ mYUf cZgh Xm
- = HUWYf@]Wbgi fYk]h 9bXcfgYaYbh]b7\Ya]gffm7-12
 - 5. 7 ca d`YhYh\YfYei]fYa YbhgZcf h\Y7\Ya]gfma U'cf Ugg\ck b UVcj Y]bWi X]b[7 < 9(0).
 - 6. DfcZYgglcbU 9Xi Which. 981 1) (), 2) (), 32*, (1,, (33/DGM213, 31, /G922)
 - 7. 7ca d`Yhcb cZUdd`]WWYdcfhcbgcZhYDfU]g=
 - 8. : cf UXX]ljcbU]bZcfa Ujcb, gYYh Y5 gg]gJbh8 YUb Zcf HYUWYf 9Xi Whjcb UbX5 WYX]lUjcb.

CHEMISTRM

112 7\Ya]W 9ei]`]Vf]ia (4)

DfYfYei]g]HY. 7<9111. 8YHU] YX ghi XmcZh\Ydf]bVJd`Yg cZYei]`]Vf]i a]b WYa]W/ gnghYa g H\Y`UVcfUrcfm]g ei U]HU1ji YUbUng]g H\fYY `YMa fYgUbX cbY3\ci f`UVcfUrcfmdYf]cX/k YY_.

113 Gi fj YmcZ7\Ya]W =bgfi a YbkLljcb (2)

DfYfYei]g]H. 7<9111 5b]bhfcXi Wijcbhc WYa]W/]bgffi a YbHJjcbi gYX]b]bXi gffm]bW/X]b[]h]hfUjcbg gdYWfcgW/dmUbXWfca Uhc[fU d\mCbY`YWi fYUbXcbY3-\ci f`W/k YY_.

211. 5 bUnlij W 7 \ Ya]gfm(3)

DfYfYei]g]hY. 7< 9 112/7 cfYei]g]hY. 7< 9 221.

423 GYfc`c[m(2)

5 `YMA fYUbX`UVWa fgY]b]a a i bc`c[mXYa cbghfU]b[fYUMa]cbgVYhk YYbUbh][YbgUbXUbh]VcX]YgUfYWbg|XYfYX I gYcZh\YgYfYUMa]cbgUgYfcX]U[bcgh]Whcc`]gdfYgYbhYX

424. =a a i bc Ya Utc c[m(5)

=bWi XYggY YMjcb, HYgJb[UbXVYYX]b[cZXcbcfg]XYbJjÚWJ]cb cZVccX[fci d UbJ][YbgUbXUbJ]VcX]Yg dfcWXi fYg Ya d`cmYX]b dfcj]X]b[Wa dU]VY VccX Zcf dUJYblg UbX df]bVJd`Yg UbX dfcWXi fYg i gYX]b VccX Wa dcbYbh h\YfUdm

425 DUfUght`c[m(2)

5 ghi XmcZdUfUghhgcZa YXJW/ g[[b]ÚWbW, Vch\]bX][Ybci gUbXZcfY][b, k]h\ dUfhJW/`Uf Ya d\Uggcb `]ZY MrWYgUbX]XYbhJÚWhJcb.

431. I f]bUng/g(2)

; fcgg d\ng|W, a]WicgWd]WUbXWYa]W/ UbUng|gcZi f]bY.

432 7`]b]W 7cffYU]cbg(1)

6UgWibXYfgUbX]b[cZUhfYXd\ngc`c[m]bX]gYUgY/WffYUljcbVYlkYb`UvcfUrcfmhYghfYgi`lgUbXUbUrca]W/ d\ngc`c[]WWUb[Yg

440 Df]bV/d`YgcZA UbU Ya YbhUbX9h]Vy(O)

DfYdUfUhcbZcfhYaYXJW/[fUXiUHYZcfdcghhcbgcZ`YUXYfg\]dUggdYfj]gcfgUbX]bgfiWtcfg

5 ``Wi fgYgUbXh\Y]fUdd`]Wh]cbga i ghVYXYÚbYXUbXUddfcj YXdf]cf hc fY[]ghYf]b[.

180 280 380 480 Gli Xm5 VfcUXDfc[fUa g(1-4)

5 `` Wi fgYgUbXh Ylf Udd`]Whlcb a i ghVYXYÚbYXUbXUddfcj YXdf]cf hc hfUj Y.

19567. GdYMU Ghi XJYg(1-4)

29567. GdW/U Ghi X/Yg(1-4)

@ck Yf-`Yj Y [fci d ghi X]Ygk \]W Xc bchUddYUf]b h YfY[i `Uf XYdUfha YbfU cZ2ff]b[g

395-67. GdYVJU Chi XJYg(1-4)

I ddYf-`Yj Y [fci d ghi X]Ygk \]W Xc bchUddYUf]b h YfY[i `Uf XYdUfha YbfU cZXf]b[g

495-67. GYa]bUf (1-3)

H: WigYXUhh YX]gWM;cbcZh YXYdUfha YbhZcfaUcfgcb`m