

Signing Up for UT Electronic Homework (QUEST)

1. Get a UTEID by accessing this URL: https://idmanager.its.utexas.edu/eid_self_help/ and choosing "Get a UTEID". (Go, figure!) Fill out the "e-form". Write down both your UTEID and your password:

UTEID: _____ **Password:** _____

You MUST accept all cookies in order to communicate with the EID web pages. If the system tells you that an EID already exists with your last name and birthdate, you may already have an EID. Follow the instructions provided by the system. Please store the EID and password in a safe place.

** Please do not create a second EID. **

2. Obtain the "Unique Course Number" from your teacher. **Unique Course Number:** _____
3. Proceed to the next page of these instructions and sign yourself up in your instructor's class.
4. One last thing (OK, 3 last things), the system has its own rules for entering numbers, calculating answers, expressing scientific notation, etc.

Numbers

- ❖ Significant digits and precision: The computer carries out all calculations to at least **six significant digits**. Do **not** use "significant figures" algorithms to round off your answer. Do **not** round off 'intermediate' calculations. Six digits are shown in solutions. **To be scored as correct, an answer must be within 1% of the computer's answer (except for an answer of zero, which must be exact)**. You will be informed of any exceptions to this tolerance.
- ❖ Scientific notation ("times 10 to the power"): Very large or very small numbers may be input with "scientific notation," e.g., $+3.56e-10$, which is 3.56 times ten to the negative tenth power. However, 468 (or 468.0) is just as good as $+4.68e+02$ or $+4.68E+02$.

Constants and Conversion Factors

- ❖ Be aware that using conversion factors and/or constants **not** identical with those used by the algorithm in the computer may cause discrepancies (e.g., using $\pi = 3.14$ instead of $\pi = 3.14159265358979324$). In general, constants other than those given in the links below should be given in the question by the instructor.

A complete list of constants and conversion factors can be found at the end of this document.

Student's Guide to Quest

URL: <http://quest.cns.utexas.edu/student/>

Quest is a new learning and assessment tool developed by the College of Natural Sciences. Quest allows you to work on assignments anywhere and get immediate feedback when you submit answers online.

Getting Started

To get started, from the home page click the arrow next to **Get Started**. After entering your UT EID you'll see a screen like the one below with your list of courses.

QUEST Learning & Assessment

COLLEGE of NATURAL SCIENCES
THE UNIVERSITY OF TEXAS AT AUSTIN

Home My Courses My Profile Help Hello, Rhonda | Log off

Current course: - select one -
Current assignment: - none -

My Courses

Choose a course:

Course	Unique	Title	Instructor	Meets	Next due date
BIO101	78733	Intro to Biology	Hostetler	MWF 10-11am	01/15/08

Enroll in new course

Assignments

To view your assignment for a given course, click on a course title. On the screen, you'll see your list of assignments, the due dates, as well as your current scores (%) and the class average for each assignment.

QUEST Learning & Assessment

COLLEGE of NATURAL SCIENCES
THE UNIVERSITY OF TEXAS AT AUSTIN

Home My Courses My Profile Help Hello, Rhonda | Log off

Current course: BIO101 (78733)
Current assignment: - select one -

Contact Instructor
Grade summary

Course list <

My Assignments: BIO101 (78733) / Intro to Biology

Instructor: Rhonda Hostetler
Meets: MWF 10-11am in PAI 1.03
Semester: Spring 2008
School: University of Texas / Biology

Choose an assignment:

Name	Due date	Submitted	My Score (%)	Class average (%)
Second Homework	01/17/08	28/29	85	
First Homework	01/15/08	✓	90	78

Viewing an Assignment

To view an assignment, click on the assignment name. You'll see a screen like the following:

The screenshot shows the QUEST Learning & Assessment interface. At the top, it says 'QUEST Learning & Assessment' and 'COLLEGE of NATURAL SCIENCES THE UNIVERSITY OF TEXAS AT AUSTIN'. Below that, there are navigation links: 'Home', 'My Courses', 'My Profile', 'Help', and a user greeting 'Hello, Rhonda | Log off'. The main heading is 'Second Homework: BIO101 (78733)' with a due date of 'January 17, 2008 11:00 AM'. There is a toolbar with various icons and a zoom level of 66%. The left pane shows a PDF document with a bar chart titled 'Recycling Project' and several multiple-choice questions. The right pane is titled 'My Answers' and contains a table for tracking answers.

My Answers				
Select an answer and click Submit.				
	Answer	Status	Tries	Points earned
1	150	✓	1/7	10
2	5	✓	2/4	5
3	<input type="button" value="v"/>		0/4	Submit
4	<input type="button" value="v"/>		0/4	Submit
5	<input type="button" value="v"/>		0/4	Submit
6	<input type="button" value="v"/>		0/4	Submit
7	<input type="button" value="v"/>		0/4	Submit
8	<input type="text"/>		0/7	Submit
9	<input type="button" value="v"/>		0/4	Submit
10	<input type="text"/>		0/7	Submit
11	<input type="text"/>		0/7	Submit
12	<input type="button" value="v"/>		0/4	Submit
13	<input type="button" value="v"/>		0/4	Submit
14	<input type="text"/>		0/7	Submit
15	<input type="text"/>		0/7	Submit
16	<input type="button" value="v"/>		0/4	Submit
17	<input type="button" value="v"/>		0/4	Submit
18	<input type="button" value="v"/>		0/4	Submit
19	<input type="button" value="v"/>		0/4	Submit

You can set the zoom level of the PDF file on the left as well as open and print the assignment if you wish. To submit answers to questions, find the question # in the **My Answers** table, select or fill-in your answer and click on the **Submit** link. The *Points earned* columns will update to show the # of points you've earned and you'll receive feedback on the correctness of your answer.

This is a close-up of the 'My Answers' table. A feedback box is overlaid on the row for Question 2, indicating a correct answer. The table shows the following data:

	Answer	Status	Tries	Points
1)	<input type="button" value="2 v"/>	✓	1/4	
2)	<input type="button" value="3 v"/>	Started	2/4	
3)	<input type="button" value="v"/>	Missed	4/4	0 Submit
4)	<input type="button" value="v"/>		0/4	Submit
5)	<input type="button" value="v"/>		0/4	Submit

Viewing Solutions

Assuming your instructor has opted to show solutions, you can view them by viewing your assignment. Once solutions are available - your instructor determines what date they are viewable - the assignment PDF will show questions as well as solutions.

Getting Help

For more information about supported browsers, how scores are determined and other information related to Quest, please click **Help** on the top menu bar.

UT On-line Homework Information

Numbers in Calculations

- Significant digits and precision The computer carries out all calculations to at least six significant digits. Do not use "significant figures" algorithms to round off your answer. Do not round off 'intermediate' calculations. Six digits are shown in solutions. To be scored as correct, an answer must be within 1% of the computer's answer (except for an answer of zero, which must be exact). You will be informed of any exceptions to this tolerance.
- Scientific/Engineering notation ("times 10 to the power") Very large or very small numbers may be input with "scientific notation," e.g., +3.56e-10, which is 3.56 times ten to the negative tenth power. However, 468 (or 468.0) is just as good as +4.68e+02 or +4.68E+02.

Constants and Conversion Factors

- Be aware that using conversion factors and/or constants not identical with those used by the algorithm in the computer may cause discrepancies (e.g., using Avogadro's number, N_A as $6.02 \times 10^{+23}$ instead of $6.0221367 \times 10^{+23}$.) In general, constants other than those given in the links below should be given in the problem by the instructor.

Constants

Speed of Light, $c = 2.99792458 \times 10^{+8}$ m/s

Faraday's Constant, $F = 96485.47$ C/mol electrons

Plank's constant, $h = 6.626075 \times 10^{-34}$ J•s

Boltzman's constant, $k_B = 1.380658 \times 10^{-23}$ J/K

Mass of an Electron, $m_e = 9.1093897 \times 10^{-31}$ kg

$N_A = 6.0221367 \times 10^{+23}$ 1/mol

Pstd = $1.013 \times 10^{+5}$ Pa

The charge on an electron, $q_e = 1.60217733 \times 10^{-19}$ C

"Energy" Gas Constant, $R = 8.314510$ J/K

1 amu = $1.6605402 \times 10^{-27}$ kg (1/12th of the mass of C-12)

Molar volume at STP, $V_m = 22.414 \times 10^{-3}$ m³/mol (or 22.414 L/mol)

UT On-line Homework Information

Conversion Factors

1 Å = 1×10^{-10} m	1 in ³ = 4.33×10^{-3} gal
1 Cal = $1 \times 10^{+3}$ cal	1 kW = 1.34 hp
1 J = 0.2389 cal	1 kWh = $3.6 \times 10^{+6}$ J
1 J = 2.778×10^{-7} kWh	1 kg = 1×10^{-3} t
1 J = $6.242 \times 10^{+18}$ eV	1 kg = $6.024 \times 10^{+26}$ u
1 W = 1.34×10^{-3} hp	1 km = 0.6215 mi
1 Pa = 9.872×10^{-6} atm	1 lb = 4.448 N
1 m Hg = 1.316 atm	1 liter = 0.0353 ft ³
1 atm = 0.760 m Hg	1 liter = 0.264 gal
1 atm = $1.013 \times 10^{+5}$ Pa	1 liter = 1×10^{-3} m ³
1 cal = 1×10^{-3} Cal	1 liter = $1 \times 10^{+3}$ cm ³
1 cal = 3.968×10^{-3} Btu	1 liter = 1.0576 qt
1 cal = 4.186 J	1 m = $1 \times 10^{+10}$ Å
1 cm = 0.3937 in	1 m = 1.0936 yd
1 cm ³ = 1×10^{-3} liter	1 m = 3.281 ft
1 day = $1.44 \times 10^{+3}$ min	1 m = 39.37 in
1 day = 2.74×10^{-3} year	1 m = 0.0006215 mi
1 day = 24 h	1 m ³ = $1 \times 10^{+3}$ liter
1 day = $8.64 \times 10^{+4}$ s	1 mi = 1.609 km
1 eV = 1.0735×10^{-9} u	1 mi = 1609.0 m
1 eV = 1.602×10^{-19} J	1 mi = 5280 ft
1 ft = 0.3048 m	1 min = 1.666667×10^{-2} h
1 ft = 0.333333 yd	1 min = 1.901×10^{-6} year
1 ft = 1.894×10^{-4} mi	1 min = 6.944×10^{-4} day
1 ft = 12 in	1 min = 60 s
1 ft ³ = 28.33 liter	1 qt = 0.9455 liter
1 ft ³ = 7.481 gal	1 s = 1.157×10^{-5} day
1 gal = 0.1337 ft ³	1 s = 1.666667×10^{-2} min
1 gal = 231 in ³	1 s = 2.777778×10^{-4} h
1 gal = 3.786 liter	1 s = 3.16×10^{-8} year
1 h = 1.141×10^{-4} year	1 metric ton = $1 \times 10^{+3}$ kg
1 h = 3600 s	1 amu = 1.66×10^{-27} kg
1 h = 4.167×10^{-2} day	1 amu = $931.5 \times 10^{+6}$ eV
1 h = 60 min	1 yd = 0.9144 m
1 hp = 0.746 kW	1 yd = 3 ft
1 hp = 746 W	1 year = $3.16 \times 10^{+7}$ s
1 in = 2.54×10^{-2} m	1 year = 365.25636 day
1 in = 2.54 cm	1 year = $5.259 \times 10^{+5}$ min
1 in = 8.333×10^{-2} ft	1 year = $8.766 \times 10^{+3}$ h

A More Complete List

Assorted Constants for UT e-hwk

(You *must* use the same constant as the computer if you want a correct answer!)

$$\begin{aligned}
 a_0 &= 5.29177249 \times 10^{-11} \text{ m} \\
 c &= 2.99792458 \times 10^8 \text{ m/s} \\
 \epsilon_0 &= 8.854187817 \times 10^{-12} \text{ C}^2/\text{N m}^2 \\
 F &= 96485.47 \text{ C/mol electrons} \\
 k_e &= 8987551788.0 \text{ N m}^2/\text{C}^2 \\
 G &= 6.67259 \times 10^{-11} \text{ N m}^2/\text{kg}^2 \\
 g &= 9.8 \text{ m/s}^2 \\
 h &= 6.626075 \times 10^{-34} \text{ J s} \\
 k_B &= 1.380658 \times 10^{-23} \text{ J/K} \\
 \lambda_C &= 2.42631058 \times 10^{-12} \text{ m} \\
 \mu_0 &= 12.5663706144 \times 10^{-7} \text{ N/A}^2 \\
 m_e &= 9.1093897 \times 10^{-31} \text{ kg} \\
 M_{\text{earth}} &= 5.98 \times 10^{24} \text{ kg} \\
 M_{\text{moon}} &= 7.36 \times 10^{22} \text{ kg} \\
 m_n &= 1.6749286 \times 10^{-27} \text{ kg} \\
 m_p &= 1.672623 \times 10^{-27} \text{ kg} \\
 M_{\text{sun}} &= 1.991 \times 10^{30} \text{ kg} \\
 N_A &= 6.0221367 \times 10^{23} \text{ 1/mol} \\
 P_{\text{std}} &= 1.013 \times 10^5 \text{ Pa} \\
 q_e &= 1.60217733 \times 10^{-19} \text{ C} \\
 R &= 8.314510 \text{ J/K mol} \\
 R_{\text{earth}} &= 6.37 \times 10^6 \text{ m} \\
 R_{\text{earth_moon}} &= 3.84 \times 10^8 \text{ m} \\
 R_{\text{earth_sun}} &= 1.496 \times 10^{11} \text{ m} \\
 R_H &= 1.0973731534 \times 10^7 \text{ 1/m} \\
 R_{\text{moon}} &= 1.74 \times 10^6 \text{ m} \\
 R_{\text{sun}} &= 6.96 \times 10^8 \text{ m} \\
 u &= 1.6605402 \times 10^{-27} \text{ kg} \\
 V_m &= 22.414 \times 10^{-3} \text{ m}^3/\text{mol}
 \end{aligned}$$

Conversion Factors

(You *must* use the same conversion factors as the computer if you want a correct answer!)

$$\begin{aligned}
 1 \text{ \AA} &= 1 \times 10^{-10} \text{ m} \\
 1 \text{ Cal} &= 1 \times 10^3 \text{ cal} \\
 1 \text{ mm Hg} &= 1.316 \text{ atm} \\
 1 \text{ J} &= 0.2389 \text{ cal} \\
 1 \text{ J} &= 0.738 \text{ ftlb} \\
 1 \text{ J} &= 1 \times 10^7 \text{ erg} \\
 1 \text{ J} &= 2.778 \times 10^{-7} \text{ kWh} \\
 1 \text{ J} &= 6.242 \times 10^{18} \text{ eV} \\
 1 \text{ J} &= 9.488 \times 10^{-4} \text{ Btu} \\
 1 \text{ N} &= 0.2248 \text{ lb} \\
 1 \text{ N} &= 1 \times 10^5 \text{ dyne} \\
 1 \text{ Pa} &= 9.872 \times 10^{-6} \text{ atm} \\
 1 \text{ W} &= 1.34 \times 10^{-3} \text{ hp} \\
 1 \text{ atm} &= .760 \text{ Hg} \\
 1 \text{ atm} &= 1.013 \times 10^5 \text{ Pa} \\
 1 \text{ cal} &= 1 \times 10^{-3} \text{ Cal} \\
 1 \text{ cal} &= 3.968 \times 10^{-3} \text{ Btu} \\
 1 \text{ cal} &= 4.186 \text{ J} \\
 1 \text{ cm} &= 0.3937 \text{ in} \\
 1 \text{ cm}^3 &= 1 \times 10^{-3} \text{ liter} \\
 1 \text{ day} &= 1.44 \times 10^3 \text{ min} \\
 1 \text{ day} &= 2.74 \times 10^{-3} \text{ year} \\
 1 \text{ day} &= 24 \text{ h} \\
 1 \text{ day} &= 8.64 \times 10^4 \text{ s} \\
 1 \text{ deg} &= 0.01745329252 \text{ rad} \\
 1 \text{ deg} &= 2.777777778 \times 10^{-3} \text{ rev} \\
 1 \text{ eV} &= 1.0735 \times 10^{-9} \text{ u} \\
 1 \text{ eV} &= 1.602 \times 10^{-19} \text{ J} \\
 1 \text{ erg} &= 1 \times 10^{-7} \text{ J} \\
 1 \text{ ft} &= 0.3048 \text{ m} \\
 1 \text{ ft} &= 0.333333 \text{ yd} \\
 1 \text{ ft} &= 1.894 \times 10^{-4} \text{ mi} \\
 1 \text{ ft} &= 12 \text{ in} \\
 1 \text{ ft}^3 &= 28.33 \text{ liter} \\
 1 \text{ ft}^3 &= 7.481 \text{ gal} \\
 1 \text{ ftlb} &= 1.355 \text{ J} \\
 1 \text{ gal} &= 0.1337 \text{ ft}^3 \\
 1 \text{ gal} &= 231 \text{ in}^3 \\
 1 \text{ gal} &= 3.786 \text{ liter} \\
 1 \text{ h} &= 1.141 \times 10^{-4} \text{ year} \\
 1 \text{ h} &= 3600 \text{ s} \\
 1 \text{ h} &= 4.167 \times 10^{-2} \text{ day} \\
 1 \text{ h} &= 60 \text{ min} \\
 1 \text{ hp} &= .746 \text{ kW} \\
 1 \text{ hp} &= 746 \text{ W}
 \end{aligned}$$

Conversion Factors (cont.)

$$\begin{aligned}
 1 \text{ in} &= 2.54 \times 10^{-2} \text{ m} \\
 1 \text{ in} &= 2.54 \text{ cm} \\
 1 \text{ in} &= 8.333 \times 10^{-2} \text{ ft} \\
 1 \text{ in}^3 &= 4.33 \times 10^{-3} \text{ gal} \\
 1 \text{ kW} &= 1.34 \text{ hp} \\
 1 \text{ kWh} &= 3.6 \times 10^6 \text{ J} \\
 1 \text{ kg} &= 1 \times 10^{-3} \text{ t} \\
 1 \text{ kg} &= 6.024 \times 10^{+26} \text{ u} \\
 1 \text{ kg} &= 6.854 \times 10^{-02} \text{ slug} \\
 1 \text{ km} &= 0.6215 \text{ mi} \\
 1 \text{ lb} &= 2.248 \times 10^{-6} \text{ dyne} \\
 1 \text{ lb} &= 4.448 \text{ N} \\
 1 \text{ liter} &= 0.0353 \text{ ft}^3 \\
 1 \text{ liter} &= 0.264 \text{ gal} \\
 1 \text{ liter} &= 1 \times 10^{-3} \text{ m}^3 \\
 1 \text{ liter} &= 1 \times 10^{+3} \text{ cm}^3 \\
 1 \text{ liter} &= 1.0576 \text{ qt} \\
 1 \text{ m} &= 1 \times 10^{10} \text{ \AA} \\
 1 \text{ m} &= 1.0936 \text{ yd} \\
 1 \text{ m} &= 3.281 \text{ ft} \\
 1 \text{ m} &= 39.37 \text{ in} \\
 1 \text{ m} &= 0.0006215 \text{ mi} \\
 1 \text{ m}^3 &= 1 \times 10^{+3} \text{ liter} \\
 1 \text{ mi} &= 1.609 \text{ km} \\
 1 \text{ mi} &= 1609.0 \text{ m} \\
 1 \text{ mi} &= 5280 \text{ ft} \\
 1 \text{ min} &= 1.666667 \times 10^{-2} \text{ h} \\
 1 \text{ min} &= 1.901 \times 10^{-6} \text{ year} \\
 1 \text{ min} &= 6.944 \times 10^{-4} \text{ day} \\
 1 \text{ min} &= 60 \text{ s} \\
 1 \text{ qt} &= 0.9455 \text{ liter} \\
 1 \text{ rad} &= 0.1591549431 \text{ rev} \\
 1 \text{ rad} &= 57.29577951 \text{ deg} \\
 1 \text{ rev} &= 360 \text{ deg} \\
 1 \text{ rev} &= 6.283185308 \text{ rad} \\
 1 \text{ s} &= 1.157 \times 10^{-5} \text{ day} \\
 1 \text{ s} &= 1.666667 \times 10^{-2} \text{ min} \\
 1 \text{ s} &= 2.777778 \times 10^{-4} \text{ h} \\
 1 \text{ s} &= 3.16 \times 10^{-8} \text{ year} \\
 1 \text{ slug} &= 14.59 \text{ kg} \\
 1 \text{ t} &= 1 \times 10^3 \text{ kg} \\
 1 \text{ u} &= 1.66 \times 10^{-27} \text{ kg} \\
 1 \text{ u} &= 931.5 \times 10^6 \text{ eV} \\
 1 \text{ yd} &= 0.9144 \text{ m} \\
 1 \text{ yd} &= 3 \text{ ft} \\
 1 \text{ year} &= 3.16 \times 10^{+7} \text{ s} \\
 1 \text{ year} &= 365.25636 \text{ day} \\
 1 \text{ year} &= 5.259 \times 10^{+5} \text{ min} \\
 1 \text{ year} &= 8.766 \times 10^{+3} \text{ h}
 \end{aligned}$$

Periodic Table of the Elements

1A 1												8A 18						
1 H 1.0079	2A 2												3A 13	4A 14	5A 15	6A 16	7A 17	2 He 4.0026
3 Li 6.941	4 Be 9.0122											5 B 10.811	6 C 12.011	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.1797	
11 Na 22.9898	12 Mg 24.3050	3B 3	4B 4	5B 5	6B 6	7B 7	8B 8 9 10			1B 11	2B 12	13 Al 26.9815	14 Si 28.0855	15 P 30.9738	16 S 32.066	17 Cl 35.4527	18 Ar 39.948	
19 K 39.0983	20 Ca 40.078	21 Sc 44.9559	22 Ti 47.88	23 V 50.9415	24 Cr 51.9961	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.69	29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.9216	34 Se 78.96	35 Br 79.904	36 Kr 83.80	
37 Rb 85.4678	38 Sr 87.62	39 Y 88.9059	40 Zr 91.224	41 Nb 92.9064	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.9055	46 Pd 106.42	47 Ag 107.8682	48 Cd 112.411	49 In 114.82	50 Sn 118.710	51 Sb 121.75	52 Te 127.60	53 I 126.9045	54 Xe 131.39	
55 Cs 132.9054	56 Ba 137.327	57 La 138.9055	72 Hf 178.49	73 Ta 180.9479	74 W 183.85	75 Re 186.207	76 Os 190.2	77 Ir 192.22	78 Pt 195.08	79 Au 196.9665	80 Hg 200.59	81 Tl 204.3833	82 Pb 207.2	83 Bi 208.9804	84 Po (209)	85 At (210)	86 Rn (222)	
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (263)	107 Bh (262)	108 Hs (265)	109 Mt (266)										

58 Ce 140.115	59 Pr 140.9076	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.965	64 Gd 157.25	65 Tb 158.9253	66 Dy 162.50	67 Ho 164.9303	68 Er 167.26	69 Tm 168.9342	70 Yb 173.04	71 Lu 174.967
90 Th 232.0381	91 Pa 231.0359	92 U 238.0289	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (260)

Activity Series of Some Elements

Li K Ca Na

displaces H from cold water

Mg Al Mn Zn Cr Fe

displaces H from steam

Cd Co Ni Sn Pb

displaces H from nonoxidizing acids

H Sb Cu Hg Ag Au

SOME SOLUBILITY RULES

all Group 1A salts, ammonium salts, nitrates, acetates, chlorates, and perchlorates are soluble

all halides (F^- , Cl^- , Br^- , and I^-) are soluble except with Ag^+ , Pb^{2+} , Hg_2^{2+} , and Hg^{2+}
other exceptions are fluoride with any Group 2A metals.

all sulfates are soluble except with Ca^{2+} , Sr^{2+} , Ba^{2+} , Pb^{2+} , Hg^{2+} , and Ag^+

all sulfides are insoluble except those of the IA & IIA elements & NH_4^+

all carbonates, phosphates, and arsenates are insoluble except with the IA elements and NH_4^+

all hydroxides are insoluble except those of the IA elements and with Ca^{2+} , Sr^{2+} , and Ba^{2+}