Dr Sean's Chemistry Class Way to SUCCESS

The Periodic Table of the Elements

1 H Hydrogen 1.00794																	2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012182											5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.00674	8 O Oxygen 15.9994	9 F Fluorine 18.9984032	10 Ne Neon 20.1797
11 Na Sodium 22.989770	12 Mg Magnesium 24.3050											13 Al Aluminum 26.981538	14 Si Silicon 28.0855	15 P Phosphorus 30.973761	16 S Sulfur 32.066	17 Cl Chlorine 35.4527	18 Ar Argon 39.948
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955910	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938049	26 Fe Iron 55.845	27 Co Cobalt 58.933200	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.723	32 Ge Germanium 72.61	33 As Arsenic 74.92160	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.90550	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.29
55 Cs Cesium 132.90545	56 Ba Barium 137.327	57 La Lanthanum 138.9055	72 Hf Hafnium 178.49	73 Ta Tantalum 180.9479	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.078	79 Au Gold 196.96655	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98038	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (262)	108 Hs Hassium (265)	109 Mt Meitnerium (266)	110 (269)	111 (272)	112 (277)	113	114				

58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92534	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93032	68 Er Erbium 167.26	69 Tm Thulium 168.93421	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
90 Th Thorium 232.0381	91 Pa Protactinium 231.03588	92 U Uranium 238.0289	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

DSE Challenge by Dr Sean Chemistry

Topic 7 Redox Reactions, Chemical Cells and Electrolysis

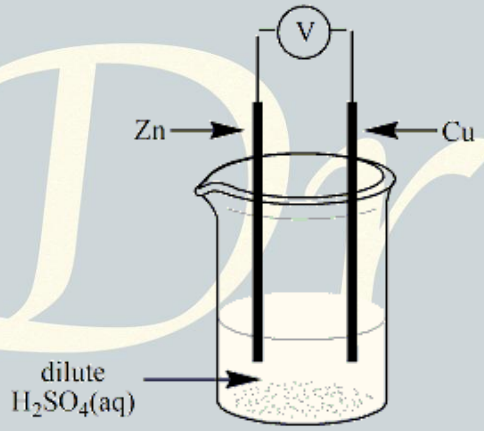
5**
A+
Dr
Dr Sean Chemistry
DSE • IAL • IB

You have 25 mins to complete 10 Questions.

1. What is the oxidation number of O in H_2O_2?
   Level 3

   A. 0
   B. -0.5
   C. -1
   D. -2

2. Consider the following chemical cell:

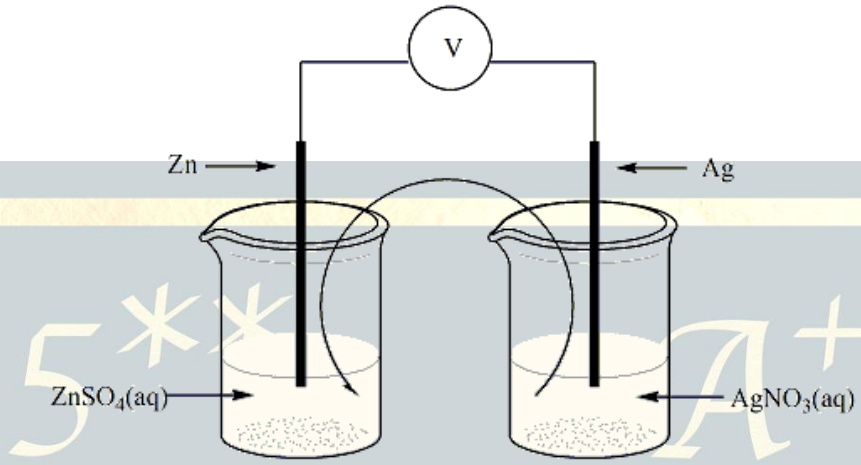


   Which of the following statements are correct?

   1) The mass of the zinc electrode decreases.
   2) The mass of the copper electrode increases.
   3) Colorless gas bubbles are formed on BOTH electrodes.
   Level 4

   A. 1 and 2
   B. 1 and 3
   C. 2 and 3
   D. 1, 2 and 3

3. Consider the following chemical cell:



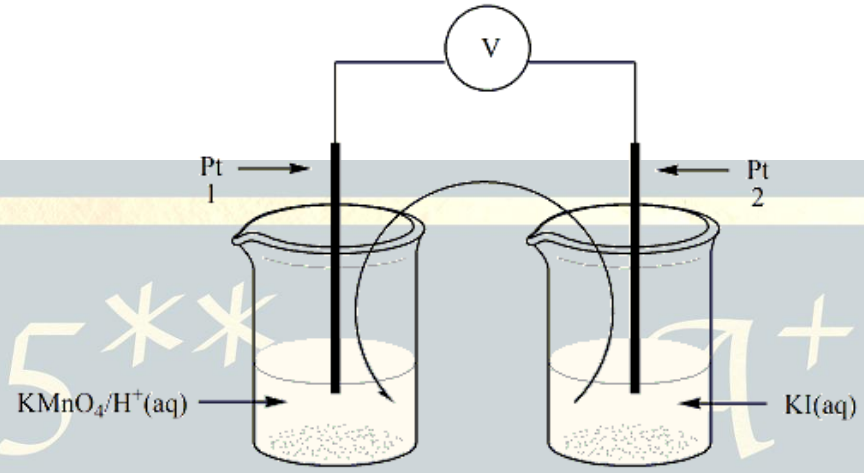
Which of the following statements are INCORRECT?

1) Sodium chloride can be used to prepare a salt bridge for this cell.
2) The mass increased in one of the electrodes is the same as the mass decreased in another electrode.
3) The number of metal particles involved in the reactions on the two electrodes are different.

Level 5

A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 1, 2 and 3

4. Consider the following chemical cell:



Which of the following statements are correct?

1) The purple color of the electrolyte in half-cell A becomes paler.
2) The electrolyte in half-cell B turns brown.
3) The voltmeter reading will be negative if platinum electrode 1 is connected to the negative terminal of the voltmeter.

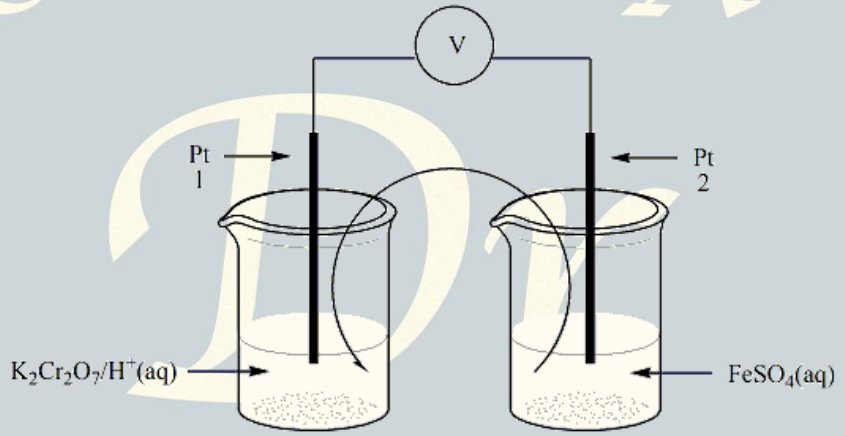
Level 5

A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 1, 2 and 3

5. What is the maximum number of mol of iodide ions that can be completely consumed by 1 mol of dichromate ion?
Level 3

A. 1/3 mol
B. 1/6 mol
C. 3 mol
D. 6 mol

6. Consider the following chemical cell:



Given that both electrolytes have the same initial concentration and volume (2.0 mol dm^{-3} and 1 dm^3 respectively), what will be the concentration of the iron(II) sulphate solution when the concentration of the acidified potassium dichromate solution is decreased to 1.8 mol dm^{-3}.
Level 5

A. 1.8 mol dm^{-3}
B. 1.4 mol dm^{-3}
C. 0.8 mol dm^{-3}
D. Cannot be determined.

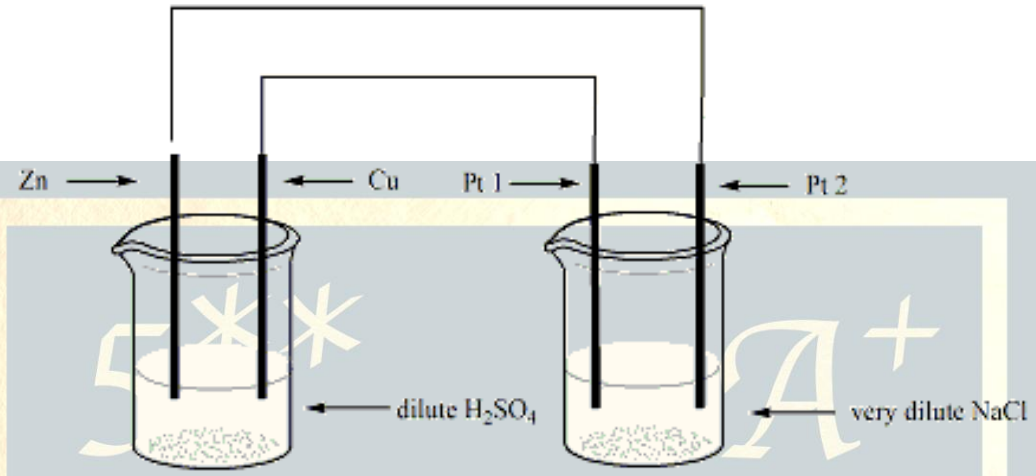
7. Which of the following statements concerning the electrolysis of concentrated sodium chloride solution are correct?

1) H^+ ion is preferentially discharged at the negative electrode to give H_2 as it has stronger oxidizing power than Na^+.
2) Cl^- ion is preferentially discharged at the positive electrode to give Cl_2 as the concentration of Cl^- is much higher than the concentration of OH^-.
3) The concentration of the sodium chloride solution decreases when the cell is operating.

Level 3

A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 1, 2 and 3

8. Consider the following setup:



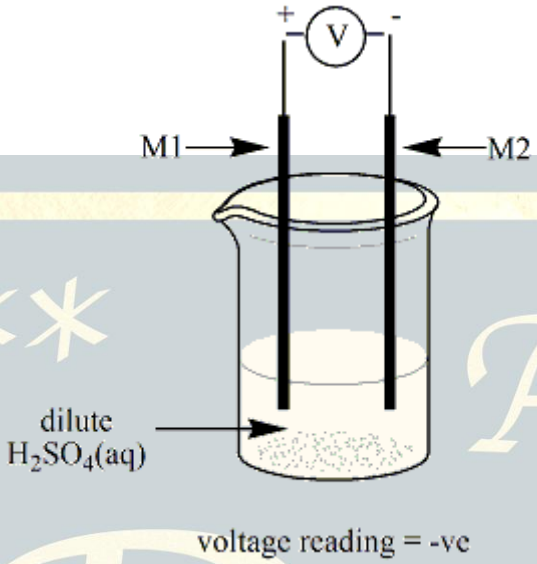
Which of the following statements are correct?

1) The sign of the electrodes from left to right is - + - +.
2) There is colorless gas bubbles formed at the copper electrode and the platinum electrode 2.
3) The concentration of the sodium chloride solution increases when the cell is operating.

Level 5

A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 1, 2 and 3

9. Consider the following setup:



The voltmeter reading is negative when M1 is connected to the positive terminal of the voltmeter while M2 is connected to the negative terminal of the voltmeter.

Which of the following statements are correct?

1) M1 has stronger reducing power than M2.
2) Electrons flow from M1 to M2.
3) Ions formed by M1 is a weaking oxidizing agent than the ions formed by M2.

Level 4

A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 1, 2 and 3

10. A solution containing 1.0 mol of acidified potassium permanganate was reacted with 1.0 mol of hydroxylamine ($HONH_2$).
After the reaction, 0.8 mol of permanganate remained unreacted, and 0.5 mol of hydroxylamine was left.
Given that MnO_4^- is reduced to Mn^{2+}, determine the nitrogen-containing product formed in this redox reaction.
Level 5**

A. N_2O
B. NO
C. NO_2
D. Cannot be determined.