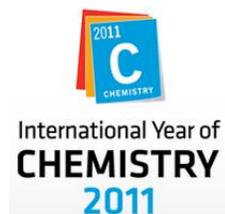


RS•C
ROYAL SOCIETY OF CHEMISTRY



SCI
where science meets business

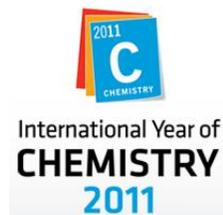
IYC Chemistry Table Quiz 2011



Medicinal Chemistry & Biochemistry



1. Which heavy metal is found in Kaopectate and is used in treating peptic ulcers?
2. What does the “R” stand for in RNA?
3. The Krebs Cycle is also known as the “??? acid cycle”
4. Which triterpene, important in natural steroid synthesis, was originally obtained in commercial quantities from shark liver oil?
5. Azidothymidine is used to treat which disease?
6. What do biochemists call a non-protein compound that binds to a protein and is required for the protein’s biological activity?
7. What is the IUPAC name for or the chemical formula of pyruvic acid?
8. How is the drug Fluoxetine better known as?
9. And likewise Sildenafil citrate?
10. What was thalidomide originally used to treat?

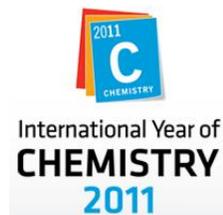


Nobel Laureates in Chemistry

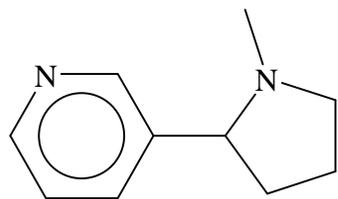


Identify these Nobel Prize winners from date, initials, nationality & topic (we only want the surnames) :

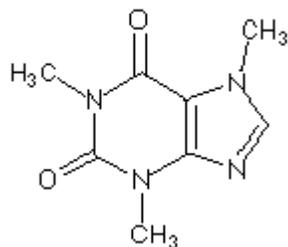
- | | | | |
|----------|------|-------------|--------------------------------------|
| 1. 1909 | WO | Germany | Catalysis & equilibria |
| 2. 1911 | MC | Pol/Fr | Radium & Polonium |
| 3. 1936 | PD | Netherlands | X-Ray diffraction |
| 4. 1954 | LP | USA | Nature of the chemical bond |
| 5. 1967 | GP | UK | Fast reactions |
| 6. 1973 | GW | UK | Organometallic sandwich compounds |
| 7. 1974 | PF | USA | Physical chemistry of macromolecules |
| 8. 1987 | J-ML | France | Cryptands |
| 9. 1994 | GO | USA/Hungary | Carbocations |
| 10. 2011 | DS | Israel | Quasicrystals |



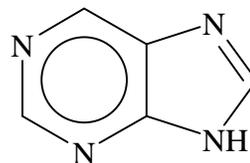
Nitrogen Heterocycles



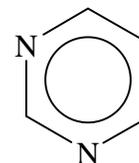
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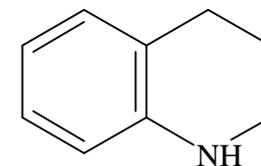
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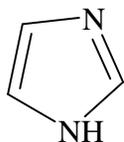
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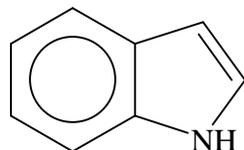
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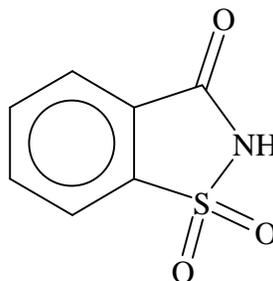
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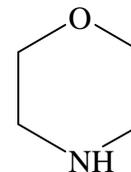
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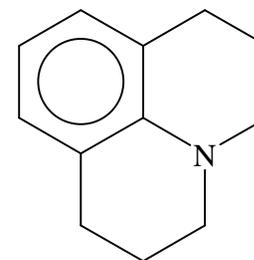
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9



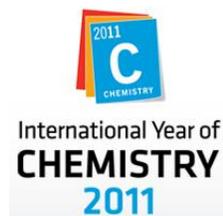
10

caffeine, imidazole, indole, julolidine, morpholine,
nicotine, purine, pyrimidine, saccharine, tetrahydroquinoline

History of the Chemical Industry



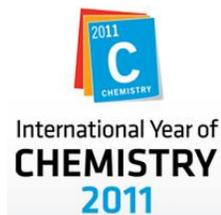
1. “Soda ash” from certain salt-tolerant plants (as opposed to the more readily available “potash”) was originally used to make which two important commodities?
2. Alum (a hydrated potassium aluminium salt) was a mordent for textile dyeing. What was the anion?
3. Which Belgian invented an important process for making sodium carbonate in the 1860’s?
4. What metal forms the cathode in the Castner-Kellner process for electrolysing brine?
5. What metal is combined with copper to make brass?
6. What process for making rayon involves treating alkaline cellulose with carbon disulphide?
7. For which company was Haber working when he worked out how to make ammonia from nitrogen and hydrogen?
8. And which company first marketed acetyl salicylic acid as “Aspirin”?
9. And which US chemical major was founded in 1802 by a French gunpowder manufacturer?
10. Which process for making sulphuric acid, invented in 1746, involved oxidising sulphur dioxide in large vats made of a heavy metal?



Astrochemistry and Geochemistry



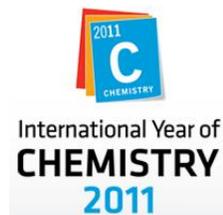
1. What is the most abundant gas in the atmosphere of Venus?
2. And what are its clouds composed of?
3. Likewise, what is the main gas in the atmosphere of Titan?
4. And what are its clouds composed of?
5. What is the third most common element in the sun?
6. Traces of which element gives emeralds their green colour?
7. Sapphire is predominantly made up of which metal oxide?
8. Pyrite is predominantly made up of iron and which other element?
9. Abnormally high concentrations of which element in clays laid down 65 million years ago suggest that the extinction of the dinosaurs had an extraterrestrial and/or volcanic cause?
10. What is the formula of black iron oxide/magnetite?



Physical Chemistry



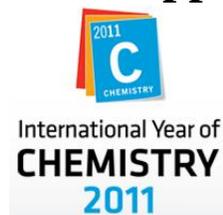
1. Whose law states that for an ideal gas, the volume is proportional to the absolute temperature, at constant pressure?
2. And whose states that the volume is inversely proportional to the pressure at constant temperature?
3. What is special about water at 273.2K and 0.006 atmospheres?
4. Is the gas constant approximately 2, 4 or 8 JK⁻¹mol⁻¹
5. Whose constant is the gas constant divided by Avogadro's number?
6. Does the Lyman series concerns the ultraviolet spectrum of the hydrogen atom, the hydrogen molecule or the helium atom?
7. Whose derived the quantum mechanical equation $\hat{H}(\Psi) = E \Psi$?
8. Whose equation links the voltage of an electrochemical cell to the temperature and the ratios of the concentrations of oxidised and reduced species?
9. Who were the two CXVIII Italian scientists who laid the foundations of electrochemistry?
10. What does the "S" in LASER stand for?



Polymer Chemistry



1. Many car bumpers are made of the tough plastic ABS. What does the “S” stand for?
2. Who was the chemist who invented nylon?
3. What does the “T” stand for in PET (as in drinks bottles)?
4. What polymers are made from polyisocyanates and polyols?
5. What is the major monosaccharide in cellulose?
6. What is the process called whereby natural rubber is cross-linked with sulphur?
7. From which polymer are CD’s and DVD’s made?
8. Which compound, used to make epoxy resin, is oestrogenic and has been banned from plastics for eg babies’ bottles.
9. What is the polymer that is used in Perspex & Plexiglass?
10. The biodegradable, renewable polymer “PLA” is now finding many applications. What does “PLA” stand for?



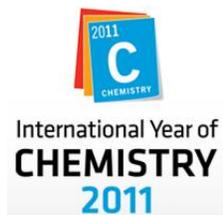
The Periodic Table



Name these technologically important elements,
many of them listed as “strategic” by the US.

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<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
<input type="checkbox"/>	4	<input type="checkbox"/>	5	6	7	<input type="checkbox"/>	8	<input type="checkbox"/>	<input type="checkbox"/>									
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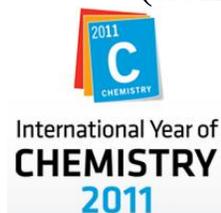
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**	<input type="checkbox"/>	10	<input type="checkbox"/>											



Food Chemistry



1. The “notorious” food additive E101, is actually a vitamin. Which one?
2. Whose reaction, between an amino-acid and a reducing sugar, is responsible for browning during cooking?
3. The deficiency of which element in the diet is responsible for most cases of goitre?
4. People with Celiac disease are sensitive to which protein in wheat flour?
5. Sucrose is composed of glucose and which other monosaccharide?
6. Which amino acid has the abbreviation Trp?
7. Which potassium salt is added to the brine used to cure salami and corned beef?
8. Which heavy metal is the permitted food additive E175?
9. In 1985, some Austrian wines were found to have been deliberately adulterated with which organic compound?
10. In 1981 a yellow dye made from which aromatic amine was found in Spanish oil (denatured rapeseed oil but marketed as olive oil), and killed 400 people?



Miscellaneous



1. What would the hypothetical five membered ring compound C_4H_5As be called?
2. What mineral regulates the matter/antimatter reaction in the warp core of the *Enterprise* in Star Trek?
3. Under what tradename did Corning market borosilicate glass in 1915?
4. In RNA, what base replaces the Thymine found in DNA?
5. In chemistry sets, what is an aqueous solution of sodium metasilicate, Na_2SiO_3 often called?
6. In Kurt Vonnegut's *Cat's Cradle*, what was the form of ice that was solid at room temperature?
7. How is a pyrotechnic mixture of aluminium powder and iron oxide commonly known?
8. What is the oxidation state of manganese in potassium permanganate?
9. How is 2-chlorobenzalmalonitrile better known when used in riot control?
10. Psilocybin is a psychedelic compound found in certain species of which type of foodstuff?

