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| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **What is the Principle Quantum number (n) of the first shell to have d orbitals?** | | **(A)**  [1](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [2](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [3](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [4](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 2***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **S orbitals have an azimuthal quantum number(L) of** | | **(A)**  [0](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [1](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [2](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [3](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 3***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **p orbitals have an azimuthal quantum number (L) of:** | | **(A)**  [0](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [1](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [2](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [3](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 4***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **d orbitals have an azimuthal quantum (L) number of** | | **(A)**  [0](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [1](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [2](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [3](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 5***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **There are how many values of mL are there for L= 2 (d orbitals)** | | **(A)**  [1](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [2](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [5](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [7](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 6***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **Which quantum number describes the "shells" and "size" of orbitals** | | **(A)**  [principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [azimuthal](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [magnetic](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [spin](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 7***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **Which quantum number describes the shapes of the orbitals** | | **(A)**  [principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [azimuthal](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [magnetic](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [spin](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | |  | |  | |

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| ***Question 8***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **Which quantum number describes the orientation of an orbital** | | **(A)**  [principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [azimuthal](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [magnetic](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [spin](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | |  | |  | |

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| ***Question 9***   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **The places where electron probabilty distribution functions are zero are called** | | **(A)**  [orbitals](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [wavefunctions](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [nodes](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [null points](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | |  | |

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| ***Question 10***   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **Which quantum number determines the energy of an electron in a hydrogen atom?** | | **(A)**  [n](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [L](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [m](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer)[L](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [ms](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | |  | | [Hint](javascript:void(0);) | | |  | | --- | |  | | |

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| ***Question 11***   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  | | --- | | **The spin quantum number is a result of:** | | **(A)**  [Aufbau Principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(B)**  [Pauli Exclusion Principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(C)**  [Heisenberg Uncertainty Principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | **(D)**  [Mendeleev's Principle](http://www.ualr.edu/rebelford/chem1402/q1402/X3/c7/7-3/Check%20the%20answer) | | |

12. Quantum numbers are

1. arithmetical values
2. numerical values
3. geometric values
4. logical values

Answer B

13.  Use of quantum numbers is to specify electron's

1. energy
2. position
3. particles
4. velocity

Answer B

**14:** Azimuthal quantum number actually represents

1. shells
2. sub shells
3. energy
4. none

Answer B

**15:** Quantum numbers are used to describe

1. proton
2. nucleus
3. electron
4. positron

Answer C

**16:** Letter s for azimuthal quantum number stands for

1. sharp
2. strong
3. sufficient
4. simple

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| **Question 17** |

The pair of species with the same bond order is **[CBSE AIPMT 2012]**

|  |  |
| --- | --- |
| A | NO, CO |
| B | N2, O2 |
| C | O22-, B2 |
| D | O2+, NO+ |

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| **Question 18** |

Bond order of 1.5 is shown by **[CBSE AIPMT 2012]**

|  |  |
| --- | --- |
| A | O22- |
| B | O2 |
| C | O2+ |
| D | O2 |

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| **Question 19** |

If the 1st ionization energy of H atom is 13.6 eV, then the 2nd ionization energy of He atom is **[West Bengla JEE 2012]**

|  |  |
| --- | --- |
| A | 27.2 eV |
| B | 40.8 eV |
| C | 54.4 eV |
| D | 108.8 eV |

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| **Question 20** |

The frequency of light emitted for the transition n = 4 to n = 2 of He+ is equal to the transition in H atom corresponding to which of the following **[AIEEE 2011]**

|  |  |
| --- | --- |
| A | n = 4 to n = 3 |
| B | n = 3 to n = 1 |
| C | n = 2 to n = 1 |
| D | n = 3 to n = 2 |

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| **Question 21** |

The maximum number of electrons that can have principal quantum number, n = 3[,](http://www.questionpapers.net.in/chemistry_questions.html)and spin quantum number, ms = http://www.questionpapers.net.in/chemistry/structure-of-atom-test-2_files/image001.gif, is **[IIT JEE 2011]**

|  |  |
| --- | --- |
| A | 5 |
| B | 7 |
| C | 9 |
| D | 11 |

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| **Question 22** |

The set of quantum numbers for the outermost electron for copper in its ground state is **[Karnataka CET 2010]**

|  |  |
| --- | --- |
| A | 3, 2, 2, + 1/2 |
| B | 4, 1, 1, + 1/2 |
| C | 4, 2, 2, + 1/2 |
| D | 4, 0, 0, + 1/2 |

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| **Question 23** |

Calculate the wavelength (in nanometer) associated with a proton moving at 1.0 × 103ms−1

(Mass of proton = 1.67 × 10−27 kg and h = 6.63 × 10−34 Js ) **[AIEEE 2009]**

|  |  |
| --- | --- |
| A | 0.032 nm |
| B | 0.40 nm |
| C | 2.5 nm |
| D | 14.0 nm |

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| **Question 24** |

In an atom, an electron is moving with a speed of 600 m/s with an accuracy of 0.005%. Certainity with which the position of the electron can be located is (h = 6.6 × 10–34 kg m2s–1, mass of electron, em = 9.1 × 10–31 kg) **[AIEEE 2009]**

|  |  |
| --- | --- |
| A | 5.10 × 10–3 m |
| B | 1.92 × 10–3 m |
| C | 3.84 × 10–3 m |
| D | 1.52 × 10–4 m |

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| **Question 25** |

The ionization enthalpy of hydrogen atom is 1.312 × 106 J mol−1. The energy required to excite the electron in the atom from n = 1 to n = 2 is **[AIEEE 2008]**

|  |  |
| --- | --- |
| A | 8.51 × 105 Jmol−1 |
| B | 6.56 × 105 Jmol−1 |
| C | 7.56 × 105 Jmol−1 |
| D | 9.84 × 105 Jmol−1 |

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| **Question 26** |

When the azimuthal quantum number has the value of 2, the number of orbitals possible are **[Karnataka CET 2008]**

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| --- | --- |
| A | 7 |
| B | 5 |
| C | 3 |
| D | 0 |

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| **Question 27** |

Which of the following sets of quantum numbers represents the highest energy of an atom? **[AIEEE 2007]**

|  |  |
| --- | --- |
| A | n = 3, l = 2,m = 1, s = +1/ 2 |
| B | n = 3, l = 2,m = 1, s = +1/ 2 |
| C | n = 4, l = 0,m = 0, s = +1/ 2 |
| D | n = 3, l = 0,m = 0, s = +1/ 2 |

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| **Question 28** |

A body of mass 10 mg is moving with a velocity of 100 ms1. The wavelength of de-Broglie wave associated with it would be

(Note: h = 6.63 × 1034 Js) **[Karnataka CET 2007]**

|  |  |
| --- | --- |
| A | 6.63 × 1037m |
| B | 6.63 × 1031m |
| C | 6.63 × 1034m |
| D | 6.63 × 1035m |

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| **Question 29** |

Uncertainty in the position of an electron (mass = 9.1 × 10–31 kg) moving with a velocity 300 ms–1, accurate upto 0.001%, will be

(h = 6.63 × 10–34 Js) **[AIEEE 2006]**

|  |  |
| --- | --- |
| A | 19.2 × 10–2 m |
| B | 5.76 × 10–2 m |
| C | 1.92 × 10–2 m |
| D | 3.84 × 10–2 m |

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| **Question 30** |

In a multi – electron atom, which of the following orbitals described by the three quantum numbers will have the same energy in the absence of magnetic acid and electric fields? **[AIEEE 2005]**

(a) n = 1, l = 0, m = 0

(b) n = 2, l = 0, m = 0

(c) n = 2, l = 1, m = 1

(d) n = 3, l = 2, m = 1

(e) n = 3, l = 2, m = 0

|  |  |
| --- | --- |
| A | (a) and (b) |
| B | (b) and (c) |
| C | (c) and (d) |
| D | (d) and (e) |

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| **Question 31** |

Which of the following statements in relation to the hydrogen atom is correct? **[AIEEE 205]**

|  |  |
| --- | --- |
| A | 3s orbital is lower in energy than 3p orbital |
| B | 3p orbital is lower in energy than 3d orbital |
| C | 3s and 3p orbitals are of lower energy than 3d orbital |
| D | 3s, 3p and 3d orbitals all have the same energy |