**Group I: Choose as required (16 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1) | The condensed electronic configuration of an element in group 13, period 6 is: | | | |
|  |  | *[Xe]5d106s26p1* |  | *[Kr] 5d106s15p2* |
|  | *[Kr]5d145s25p1* |  | *[Xe]5d106s26p4* |

**ــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2) | Group 17 elements are: | | | |
|  |  | *metals* |  | *Nonmetals, all solids* |
|  | *Nonmetals, all liquids* |  | *Nonmetals, as solids, liquids, and gases* |

**ــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3) | The missing product in the following reaction is: ***4Li + O2 (excess) ?*** | | | |
|  |  | *LiO* |  | *Li2O2* |
|  | *LiO2* |  | *Li2O* |

ـــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4) | F2 has weaker bond energy than Cl2 because: | | | |
|  |  | *F is larger than Cl* |  | *F2 has more lone pairs of electrons than Cl2* |
|  | *Cl2 has more bond than F2* |  | *F is smaller than Cl* |

ـــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5) | The reactants in the following reaction is: ***XeOF4(l) + ? XeO3(aq) + 4HF*** | | | |
|  |  | *2H2O2* |  | *2OH-* |
|  | *2H2O* |  | *2H+* |

*ـــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 6) | Nitrogen gas is unreactive because it: | | | |
|  |  | *is brown* |  | *is gas* |
|  | *has strong bonds* |  | *All correct* |

ـــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7) | There is no compound with the name fluorine oxide, this is because: | | | |
|  |  | *Fluorine is less electronegative* |  | *Oxygen is smaller than fluorine* |
|  | *Fluorine is more electronegative* |  | *Both in the same period* |

ـــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــــ

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 8) | Some elements of group 15 can form more than three covalent bonds due to : | | | |
|  |  | *The existence of filled d orbitals* |  | *The existence of empty f orbitals* |
|  | *The existence of half filled d orbitals* |  | *The existence of empty d orbitals* |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Group 2: Answer the following questions: (4 marks)**

|  |  |
| --- | --- |
| 1) | Explain the shapes of s and p orbitals .  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 2) | Write equations to show the nitrogen cycle and its impotence for us. |
|  |  |