## UNIVERSIDADE FEDERAL DO RIO DE JANEIRO
**Concurso Público para provimento de vagas de cargos Técnico-Administrativos – Edital 55/2015**
**Chave de Correção Preliminar da Prova Discursiva**

**Opção de Vaga:**
**301 - Pesquisador B-C - Cromatografia e Espectrometria de Massas**

**QUESTÃO 1:**

**A)**

| Chave de Correção | |
| --- | --- |
| **Resposta** | **Qtde de Pontos** |
| CGxCG – Conventional GC, with two columns connected. First dimension (1D) is a conventional column (e.g. 30 m x 0.25 mm x 0.25 µm). Second dimension (2D) is a short one with reduced internal diameter, typically used in fast GC (e.g. 1-2 m x 0.1 mm x 0.1 µm).Modulator between two colums. | 10 |
| **Total** | **10** |

**B)**

| Chave de Correção | |
| --- | --- |
| **Resposta** | **Qtde de Pontos** |
| Advantages: Improvement of the peak capacity. All sample injected is analysed by both columns.Allow the graphic presentation of the chromatograms. Three dimensional representations of the results. Improvement of the sensitivity. | 10 |
| **Total** | **10** |

**QUESTÃO 2:**

| Chave de Correção | |
| --- | --- |
| **Resposta** | **Qtde de Pontos** |
| The size of the particles has direct influence in the efficiency of separation.Reduction of theHeight Equivalent to a Theoretical Plate (H).High pressure. Ultra- High Performance LiquidChromatography.<br>Core shell or porous shell – allow a reduce in the particle diameter, controlling the increase of the pressure of the system. | 20 |
| **Total** | **20** |

**QUESTÃO 3:**

| Chave de Correção | |
| --- | --- |
| **Resposta** | **Qtde de Pontos** |
| *Peak skewing*– distorted acquisition of the mass spectrum due to a fast change of the concentration in the quadrupole ion source.<br>Main instrumental parameters:<br>*Mass range*:mass interval wich the quadrupole is able to analyse.Reducing the mass range increase the acquisition frequency and decrease the peak skewing effect.<br>*Acquisition speed*:define amount of spectra acquired per second.The increase of the acquisition speed reduces the peak skewing effect*.*<br>*Dwell time*:time window thar each ion has to cross the analyser and reach the detector.<br>*Interscan time*:time necessary to the instrument electronics re-establish the setting before a new scan. | 20 |
| **Total** | **20** |

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**QUESTÃO 4:**

| Chave de Correção | |
| --- | --- |
| **Resposta** | **Qtde de Pontos** |
| A) It could be considered: Electrospray ionization, Chemical ionization, electron ionization, atmospheric pressure chemical ionization, and matrix assisted laser desorption ionization. Others options could be considered if corrected.<br>B) Q1 and q2 are time independent and space dependent; Q3is space independent andtime dependent.<br>C) Argon, Helium and Nitrogen. Others options could be considered if corrected. | 20 |
| **Total** | **20** |

**QUESTÃO 5:**

| Chave de Correção | |
| --- | --- |
| **Resposta** | **Qtde de Pontos** |
| It will be considered correct the options:<br>Preparation of statistical calculations, graphics, macros, reports, corporations based on statistical methods. Other applications can be accepted if correct. | 20 |
| **Total** | **20** |