Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14FP3005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Instrumental Techniques for Food Quality and Safety** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | What is the application of GC-MS and MS-MS in food industry? Explain with some example. | CO2 | 14 |
| b. | Classify chromatographic techniques based on the stationary and mobile phase. | CO2 | 6 |
| (OR) | | | | |
| 2. | a. | What are the merits and demerits of HPLC over GC? | CO2 | 6 |
| b. | What is the function of detector in HPLC? Explain the working principle of any three detectors used in HPLC. | CO2 | 14 |
| 3. | a. | What is the limitation of AAS over AES? Explain. | CO2 | 5 |
| b. | Explain the construction and operation of AAS with neat sketch. | CO2 | 15 |
| (OR) | | | | |
| 4. | a. | Write a brief note on energy component of atoms and molecules. | CO2 | 5 |
| b. | Describe with a neat sketch the construction and working of ICP- OES. | CO2 | 15 |
| 5. |  | What is the role of FT – IR in predicting the structure of the compound? And explain the working principle of FT – IR. | CO2 | 20 |
| (OR) | | | | |
| 6. | a. | What are the solvents and internal standards used in NMR and what is the significance of internal standard and deprotonated solvent and its chemical shift? | CO2 | 7 |
| b. | Discuss about the 1H spectra of phenols, enols and carboxylic acids and their chemical shift. | CO2 | 7 |
| c. | What is chemical shift and what is its importance? | CO2 | 6 |
| 7. | a. | How the molecular weight and sub groups present in the compound can be predicted with the help of Mass Spectrometer? | CO2 | 10 |
| b. | Predict the molecular weight , molecular formula and possible substructure present in the compound from the MS data given below | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Discuss about the given 13C NMR with the various carbon present | CO2 | 10 |
| b. | Write short notes on shielding, deshielding and anisotropy effect on the NMR. | CO2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. |  | How separation efficiency of the GC can be improved by selecting various chromatographic parameters explain in detail? | CO2 | 20 |

ALL THE BEST