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



**End Semester Examination – Nov/Dec– 2017**

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| **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. | Classify chromatographic method sand give example for each case. | CO2 | 10 |
| b. | State the application of column chromatography and with neat sketch explain the principle of column chromatography. | CO2 | 10 |
| (OR) | | | | |
| 2. |  | Write short notes on  i. Retention time. ii. Column efficiency. iii. Resolution. iv. Retention volume. | CO2 | 20 |
|  |  |  |  |  |
| 3. | a. | What is the difference between HPLC and GC in quantification of a compound explain. | CO2 | 5 |
| b. | What are the types of detectors used in HPLC explain its principle in detail. | CO1 | 15 |
| (OR) | | | | |
| 4. | a. | What is the application of GC-MS and MS-MS in food industry explain with some example. | CO2 | 15 |
| b. | Distinguish between isocratic and gradient elution. | CO2 | 5 |
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| 5. | a. | What are the prerequisite for the atom to absorb IR radiation. Explain various types of molecular vibration involved in FTIR spectroscopy. | CO2 | 10 |
| b. | Explain with neat sketch the working principle of IR spectrophotometer. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | How molecular weight of a compound can be predicted with the help of a Mass spectrometer, discuss in detail with neat sketch. | CO1 | 10 |
| b. | What is the importance of ionization in detecting the molecular weight of a compound using Mass spectrometer and also discuss various ionization techniques. | CO2 | 10 |
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| 7. | 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) | | | | |
| 8. | 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 |
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|  | | **Compulsory:** | | |
| 9. |  | Why predicting the structure of a compound is important and what type of information is needed to elucidate the structure of the compound explain in detail with one example. | CO2 | 20 |

ALL THE BEST