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 – April/May– 2017**

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| **Sub. Code:** | **14EI2019** | **Duration :** | **3hrs** |
| **Sub. Name** | **ANALYTICAL INSTRUMENTATION** | **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. | Prove the relationship between the absorbance and concentration in Beer Lambert’s Law. | CO1 | 8 |
| b. | List the different types of Photosensitive detectors used. Explain any two in detail | CO1 | 12 |
| (OR) | | | | |
| 2. |  | With help of neat diagrams explain the working of the following | CO1 | 20 |
|  | 1. Direct Reading Spectrophotometers 2. Microprocessor based Spectrophotometers |  |  |
| 3. |  | With a neat instrumentation setup, describe the principle of (IR) Infra  Red, spectrophotometer and the various components involved in it. | CO1 | 20 |
| (OR) | | | | |
| 4. | a. | Give the list of sample handling systems in mass spectrometry. Explain any two with neat sketch. | CO1 | 10 |
|  | b. | Explain the principle of ESR compare it with NMR. Draw and explain ESR spectrometer. | CO3 | 10 |
| 5. | a. | Give classification of chromatograph. List the parts of Gas Chromotograph Draw and explain the working of Gas Chromotograph. | CO2 | 10 |
|  | b. | With a neat schematic diagram explain Geiger Muller Counter. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Classify the methods used for oxygen measurement. Explain any one. | CO2 | 10 |
|  | b. | With a neat diagram, explain the gas density analyser. | CO2 | 10 |
| 7. | a. | Explain the instrument setup for X-ray spectroscopy | CO2 | 10 |
|  | b. | Explain in detail the concept of Fluorescences and phosphorescence. Examine the factors that influence the Fluorescences. Also explain the working of Double beam Filter Fluorometer with neat diagram. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | List the different mountings in emission spectroscopy? Explain in brief. | CO3 | 10 |
|  | b. | Give are the units of radioactivity, and explain half life period. | CO3 | 5 |
|  | c. | Disscus the salient features of scintillation counter. | CO3 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Glass is better than fused silica as a prisim construction material for mono chromotaors to be used in visible region – Justify. | CO1 | 5 |
|  | b. | Explain how spectrometer and spectrophotometer differ from each other. | CO1 | 5 |
|  | c. | Define chemical shift and explain its siginifance in NMR spectrometry. | CO2 | 5 |
|  | d. | Why the rate of propagation of EMR is less in medium containing matter? Explain. | CO2 | 5 |

ALL THE BEST