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 :** | **14ME3016** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED METROLOGY** | **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 do you mean by ‘calibration of measuring instruments’? What are the general guidelines for calibrating the instruments? | CO1 | 10 |
| b. | Describe various elements and its function of a generalized measurement system with block diagram and suitable example. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Explain in detail the basic components of coordinate measuring machine. | CO1 | 15 |
| b. | State applications of Laser Micro Meter. | CO1 | 5 |
| 3. | a. | Explain the working principle of laser interferometer with a neat sketch. | CO1 | 15 |
| b. | State the applications of laser interferometer. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | What is machine vision system? Discuss in detail about the basic steps involved in machine vision system. | CO3 | 15 |
| b | Define Wave Length Standards based on Krypton - 86 emission. | CO3 | 5 |
| 5. | a. | Explain in detail the construction and working of Scanning Electron Microscope with a neat diagram. State its applications. | CO3 | 15 |
| b. | Identify any one machine tool alignment tests on Lathe. | CO3 | 5 |
| (OR) | | | | |
| 6. | a. | What is Ball Bar? Explain in detail how it is used for testing the accuracy of machine tool with neat sketch. | CO3 | 15 |
| b. | Describe the working of Michelson Interferometer. | CO3 | 5 |
| 7. | a. | Explain the working principle of Tomlinson surface meter with a neat diagram. | CO3 | 15 |
| b. | Discuss the various elements of surface texture. | CO3 | 5 |
| (OR) | | | | |
| 8. | a. | What do you understand by geometric tolerances? | CO2 | 5 |
| b. | Discuss unilateral and bilateral system of writing tolerances with suitable example and explain which system is preferred in interchangeable manufacturing and why? | CO2 | 15 |
|  | | **Compulsory:** |  |  |
| 9. |  | Discuss on Transmission Electron Microscope (TEM) with a neat sketch. Explain its how its different from Scanning Electron Microscope. | CO3 | 20 |