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

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**End Semester Examination – Nov/Dec– 2018**

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| **Code :** | **14EI2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INDUSTRIAL 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. | Explain how calibration of pressure gauge is carried out using dead weight tester. | CO2 | 10 |
| b. | With neat sketch the construction, working and theory of McLeod gauge for measurement of vacuum. | CO1 | 10 |
| (OR) | | | |  |
| 2. | a. | Describe the methods of measurement of pressure using  i) Capacitive transducers and  ii) Piezoelectric transducers. | CO1 | 20 |
| 3. | a. | Explain flow measurement technique using hot wire anemometer. | CO1 | 10 |
|  | b. | With neat sketch explain construction and working of Rotameter. | CO1 | 10 |
| (OR) | | | |  |
| 4. | a. | Describe the schematic diagram and explain principle of operation of  i) Electromagnetic flow meter.  ii) Laser Doppler anemometer. | CO1 | 20 |
| 5. | a. | With neat diagram explain the need for cold junction compensation techniques. | CO1 | 10 |
|  | b. | Describe the construction and working of total radiation pyrometer. | CO1 | 10 |
| (OR) | | | |  |
| 6. | a. | Explain the signal conditioning system used in thermocouple with relevant sketch. | CO1 | 10 |
|  | b. | Explain the principle and working of optical pyrometer with neat diagram. | CO1 | 10 |
| 7. | a. | With necessary diagram, describe the working of air bubbler level measurement. | CO1 | 10 |
|  | b. | Explain laser level sensor and discuss its advantages and disadvantages. | CO1 | 10 |
| (OR) | | | |  |
| 8. | a. | Explain float type level measurement in detail. | CO1 | 10 |
|  | b. | Discuss any one of non contact type of level measurement systems. | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Explain the merits and demerits of radiation densitometer with its application. | CO3 | 7 |
|  | b. | State the difference between density and relative density. | CO3 | 5 |
|  | c. | What are the different types of viscometers? Explain its applications. | CO3 | 8 |