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Code No: 5404BZ

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech II Semester Examinations, June/July - 2018

INDUSTRIAL INSTRUMENTATION

(Common to CAD/CAM, EPS, HVAC, MD, PE, TE)

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Time: 3hrs

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub-questions.

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PART - A

5 x 5 Marks = 25

- 1(a)
- b)
- c)
- d)
- e)

- a) A flat rests on two blocks dimensionally different by  $0.92 \mu\text{m}$ . With a source of wavelength  $0.642 \mu\text{m}$ , what would be the number of fringes per 100mm? [5]
- b) Describe the working and theory of McLeod gauge. [5]
- c) Discuss one application of Ultrasonic type flow meter. [5]
- d) What do you understand by the term Kinematic Viscosity and Dynamic Viscosity? [5]
- e) Illustrate the purpose of variable frequency drive. [5]

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PART - B

5 x 10 Marks = 50

- 2.
- 3.
- 4.
- 5.
- 6.a)
- b)
- 7.
- 8.
- 9.

2. With the help of an example explain the use of Bevel Protractor for the measurement of angle. [10]

OR

3. Highlight the relative merits and demerits of magnetic and photoelectric pulse counting stroboscopic methods. [10]

4. Explain the working of Knudsen gauge. State the disadvantages. [10]

OR

5. Which one of the two Ionization gauges is considered better and on what considerations? Explain. [10]

6.a) Discuss why the application of Thermal conductivity principle is complicated and explain also the operation of Thermal conductivity gauge.

b) Describe the Buoyancy methods for the measurement of liquid level. Explain the advantages and disadvantages of the system described. [5+5]

OR

7. Explain schematically the operation of Mass Flow meter based on thermal principle. [10]

8. Describe the construction and working of a Saybold Viscometer. What are the sources of error in it? Explain what correction is applied to compensate for errors. [10]

OR

9. Enumerate how gamma Ray method can be used for the measurement of density. [10]

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*10th*

10.

Describe the method for the measurement of velocity. Interpret the result after interfacing and calibrating the system. [10]

OR

11.

What are the considerations to be taken care for the interfacing of density sensors? Explain the system. [10]

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