

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE SEM-VI Examination-Nov/Dec-2011**

**Subject code: 161705**

**Date: 30/11/2011**

**Subject Name: Instrumentation Measurement -II**

**Time: 10.30 am -1.00 pm**

**Total marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1(a)** (1) Give types oxygen measurement method and explain on paramagnetic type oxygen analyzer with necessary figure **04**  
(2) Explain "Gas chromatography" **03**
- (b) (1) Explain Mass spring seismic sensor with necessary diagram **02**  
(2) Write an principle of vibrating wire strain gauge and capacitive type stain gauge **02**  
(3) How to measure the length in Cartesian and Polar system **02**  
(4) Derive nearest equation **01**
- Q.2(a)** (1) Explain in detail construction and working of cone and plate viscometer and parallel plate viscometer **04**  
(2) Explain measurement techniques for measurement of moisture in gas **03**
- (b) Explain in detail IR gas analyzer **04**  
OR
- (b) Explain the principle construction and working of infrared spectrometer **04**
- (c) Define the viscosity with necessary equation and discuss Newtonian and non-Newtonian behavior of various fluids **03**  
OR
- (c) Explain the measurement of shear viscosity using capillary viscometer with necessary equation **03**
- Q.3(a)** Discuss necessary application guideline for analytical system **07**  
**Q.3(b)** Write a short note on **07**  
1) Thermal conductive detector  
2) Flame ionization detector  
OR
- Q.3(a)** Explain in detail Electronics length measurement **07**  
**Q.3(b)** How interferometry and transmit time methods useful for length measurement **07**
- Q.4(a)** Derive stain and discuss type of stain gauge and explain gauge characteristics **07**  
**Q.4(b)** Explain static and dynamic displacement (amplitude) calibration in terms of vibration **07**  
OR
- Q.4(a)** (1) Explain Liquid and gas density measurement **04**  
(2) What is polarograph and discuss type of polarograph (any one ) **03**
- Q.4(b)** Explain in detail Mass spectroscopy **07**
- Q.5(a)** Explain in brief Electrode less method of measuring conductivity **07**

OR

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|---------------|------------|--|-----------|
| <b>Q.5(a)</b> | <b>(1)</b> | Write on application of conductivity measurement                       | <b>03</b> |
|               | <b>(2)</b> | Write on short note on Ion selective electrodes                        | <b>04</b> |
| <b>Q.5(b)</b> | <b>(1)</b> | Explain in detail Residual chlorine analyzer                           | <b>03</b> |
|               | <b>(2)</b> | Which sensor is useful for oxygen dissolved in water? Give more detail | <b>03</b> |
|               | <b>(3)</b> | Write on Hersch cell   | <b>01</b> |

OR

- |               |            |   |           |
|---------------|------------|---|-----------|
| <b>Q.5(b)</b> | <b>(1)</b> | Write a properties and application of Gas detector          | <b>04</b> |
|               | <b>(2)</b> | Explain the Dynamic methods for calibration of Gas Analyzer | <b>03</b> |

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