

III B.Tech I Semester Supplementary Examinations, November 2006
INDUSTRIAL INSTRUMENTATION
(Electronics & Instrumentation Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What are mechanical comparators? Why is it used ? Give its classification. Explain each in detail .
(b) Describe the construction and working principle of mechanical optical comparators. [9+7]
2. (a) What is translational velocity?
(b) How will you measure it?
(c) List out different methods to measure it.
(d) Describe the basic principle of any two methods. [4X4=16]
3. (a) A variable reluctance type tachometer has 60 rotor teeth. The counter records 3600 counts per second. Determine the speed in rpm.
(b) An Inductive pick up operating from a 60 tooth wheel is used with a digital frequency meter to determine the speed of rotation of a shaft on which the wheel is mounted the gating period is set to $10^4 \mu\text{s}$ and a reading of 0.024 is obtained on 4 digital display. What shaft speed does this represent in r.p.s ? if the available gating periods are $10^2, 10^3, 10^4, 10^5, 10^6, 10^7$ and $10 \mu\text{s}$ respectively, which would be the optimum setting of gating period for making this measurement.
(c) While measuring speed of a steam turbine with Stroboscope single line images were observed for Stroboscope setting of 3000, 4000 and 5230 rpm. Calculate the speed of the turbine. [5+6+5]
4. (a) Draw the sketch and explain the principle and working of Beam type Load cell.
(b) What are the applications of Load cells? Explain [8+8]
5. (a) Compare analog and digital frequency measurements.
(b) With the help of a complete block diagram explain the principle and working of period measurement. [8+8]
6. Suggest some methods that may be used to measure specific gravity. Explain how a Buoyancy method is used to measure density. [16]
7. (a) List some devices for measuring viscosity in laboratory and industry. Explain any one of them.
(b) Explain velocity gradient for viscosity liquids by way of a velocity profile curve

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[8+8]

8. (a) Explain specific humidity, DBT, WBT.
(b) Explain about Galvanometric Hygrometer.

[8+8]

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