

**COLLEGE OF ENGINEERING, PUNE-5**  
(An Autonomous Institute of Govt. of Maharashtra)

**END Semester Exam**

**(IE 222) Engineering Instrumentation**

**Programme: S. Y. B. Tech Instrumentation**

Year: 2011-12

Duration: 3 hr

Semester II

Max. Marks:50

**Instructions:**

1. Figures to right indicate full marks.
2. Draw neat diagrams wherever required.
3. All questions are compulsory.

Q.1	A	What do you mean by elastic force devices? Explain any two.	4
	B	Explain digital encoders.	4
	C	Define: Indirect Calibration.	2
Q.2	A	Explain any one Indirect liquid measurement technique in detail.	4
	B	Depending upon the quantity measurement, what are the two categories of Flow meter calibration? Also explain Sliding vane type meter in detail.	4
	C	With the help of neat diagram identify functional elements in Bourdon tube pressure Gauge system.	2
Q.3	A	Draw a Generic Component Block Diagram of an Elementary FEEDBACK Control and explain in detail. Write any two advantages over feed forward control.	4
	B	Examine the Stability By Routh's Criteria. $S^5 + S^4 + 2S^3 + 2S^2 + 3S + 15 = 0$	4
	C	Find the poles and zeros of the system whose transfer function is as follows. $T(s) = \frac{2(s+1)^2(s+2)(s^2+2s+2)}{(s+4)^2(s+1)(s^2+2s+2)}$	2
Q.4	A	Write a note on digital multimeter.	4
	B	Explain Direct sine wave synthesis.	3
	C	What are the typical specifications of DMM ?write any six.	3
Q.5	A	What do you mean by PLC? Explain with the help of block schematics.	4

	<b>B</b> Draw a ladder diagram of following. 4 motors has to be started and stopped sequentially (one by one).	4
	<b>C</b> Draw the ladder rung combinational logic. <ol style="list-style-type: none"><li>1. If I31 AND I10 AND I15 are all true, output O71 will be true.</li><li>2. If I4 AND I10 AND I15 are all true, output O71 will be true.</li><li>3. If I4 AND I10 AND I7 are all true, output O71 will be true.</li><li>4. If I31 AND I10 AND I8 are all true, output O71 will be true.</li></ol>	2

**\*All the Best\***