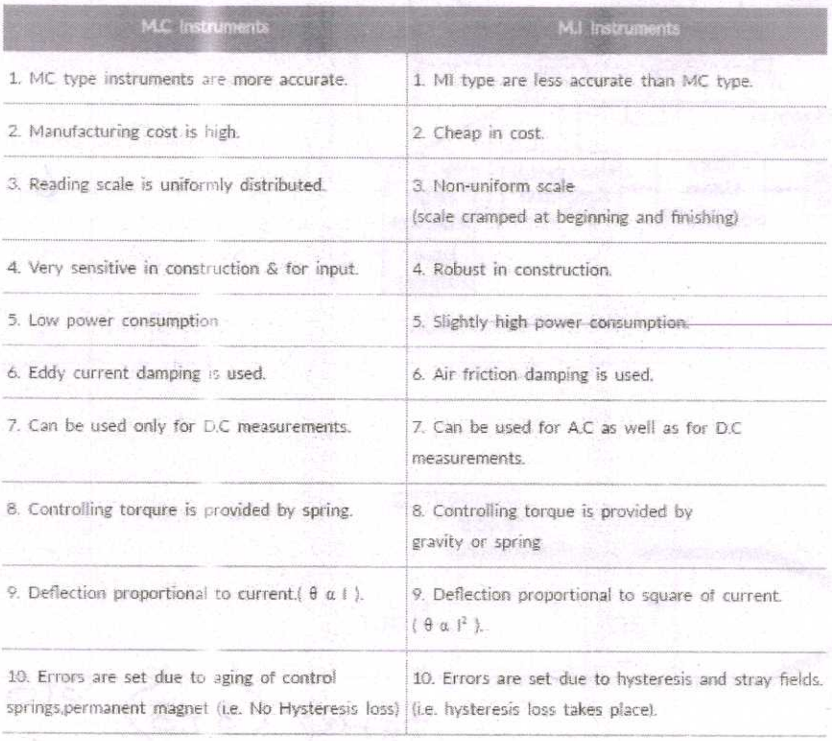
SCHEME OF VALUATION

(Scoring Indicators)

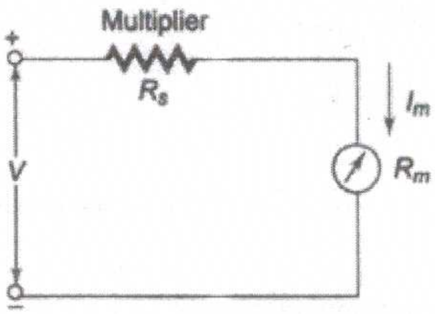
Revision:2015 Course Code: 4041

Course Title : ELECTRONICS INSTRUMENTS AND MEASUREMENTS

Qst.No	Scoring Indicator	Split up score	Sub Total	Total
	PART-A			
I. 1	The degree of exactness (closeness) of measurement compared to the expected (desired) value.	2		2
I. 2	The deflection sensitivity of a CRO is defined as the vertical deflection of the beam on the screen per unit deflecting voltage.	2		2
I. 3	Biomedical electronics, geological surveying and oceanography. They are also used in analyzing air and water pollution.(Any2) .	2		2
I. 4	1.Those suitable for favourable environments(minimum RF interference&electromagnetic induction. 2. Those intended for hostile environments	2		2
I. 5	An actuator is a mechanical device for moving or controlling a mechanism or system. It takes energy, usually transported by air, electric current, or liquid, and converts that into some kind of motion	2.		2 .
	PART-B			
II. 1	 (Any6) .	6x1 .	6 .	6

M.C Instruments	M.I Instruments
1. MC type instruments are more accurate.	1. MI type are less accurate than MC type.
2. Manufacturing cost is high.	2. Cheap in cost.
3. Reading scale is uniformly distributed.	3. Non-uniform scale (scale cramped at beginning and finishing)
4. Very sensitive in construction & for input.	4. Robust in construction.
5. Low power consumption	5. Slightly high power consumption.
6. Eddy current damping is used.	6. Air friction damping is used.
7. Can be used only for D.C measurements.	7. Can be used for A.C as well as for D.C measurements.
8. Controlling torque is provided by spring.	8. Controlling torque is provided by gravity or spring
9. Deflection proportional to current.(θ α I).	9. Deflection proportional to square of current. (θ α I²).
10. Errors are set due to aging of control springs,permanent magnet (i.e. No Hysteresis loss)	10. Errors are set due to hysteresis and stray fields. (i.e. hysteresis loss takes place).

<table>
<tr><td>II.2.</td><td>



I_m = full scale deflection current of the movement (I_{fsd})

R_m = internal resistance of movement
R_s = multiplier resistance
V = full range voltage of the instrument

From the circuit of Fig. 4.1

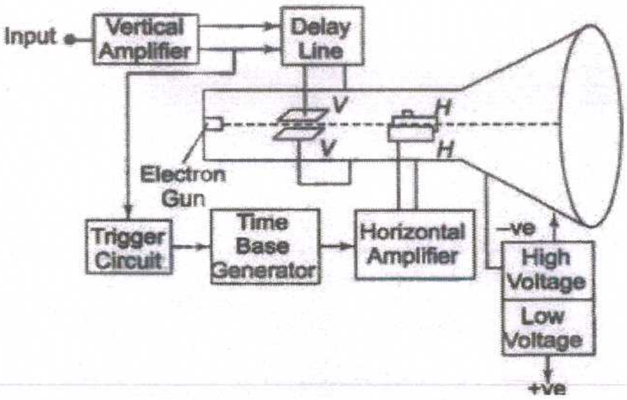
$$V = I_m (R_s + R_m)$$

$$R_s = \frac{V - I_m R_m}{I_m} = \frac{V}{I_m} - R_m$$

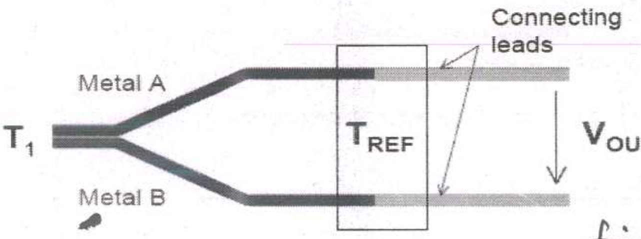
Therefore $$R_s = \frac{V}{I_m} - R_m$$

fig + expression (3+3).

</td><td>3+3</td><td>6.</td><td>6</td></tr>
<tr><td>II.3.</td><td>



</td><td>6.</td><td>6.</td><td>6</td></tr>
<tr><td>II.4.</td><td>



fig+exp (3+3).

</td><td>3+3</td><td>6.</td><td>6</td></tr>
</table>

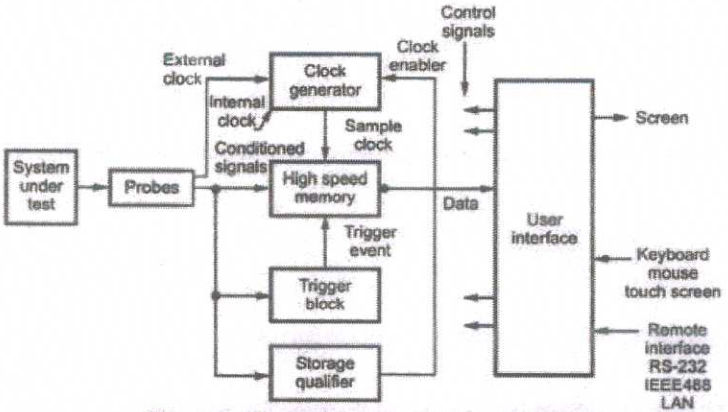
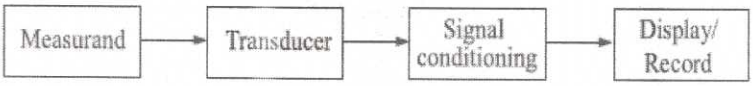
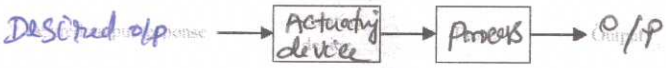
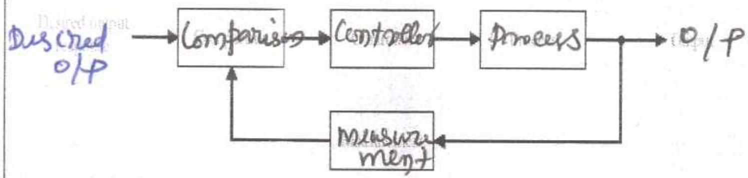
<table>
<tr><td>II.5.</td><td>

Fig. 4.14 Block diagram of logic analyzer

(fig+exp) (3+3)</td><td>3+3</td><td>6.</td><td>6</td></tr>
<tr><td>II.6.</td><td>

fig+exp. (3+3)</td><td>3+3.</td><td>6.</td><td>6</td></tr>
<tr><td>II.7.</td><td>

fig+exp.3.



fig+ex.3.</td><td>3+3</td><td>6.</td><td>6.</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

PART-C
UNIT-I

II.a.

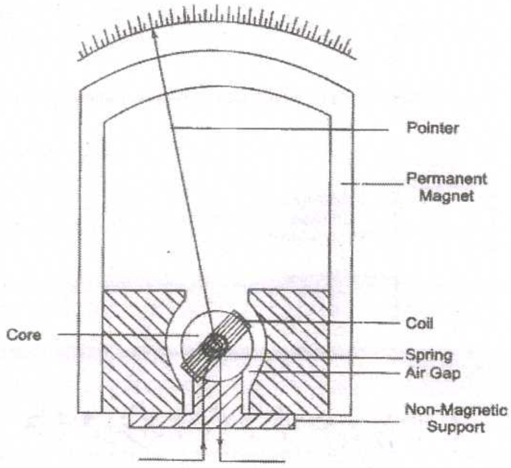
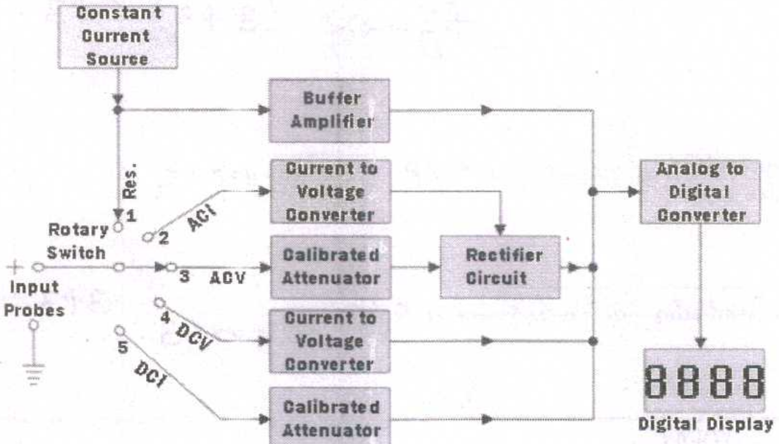


Fig. 2.2 Modern D'Arsonval Movement

fig.+exp. (4+3). | 4+3. | 7. | 7

III.b.



fig+exp.(4+4) | 4+4 | 8. | 8

OR

IV.a.

DC Voltmeter Figure 4.38 shows the dc voltmeter section of a multimeter.

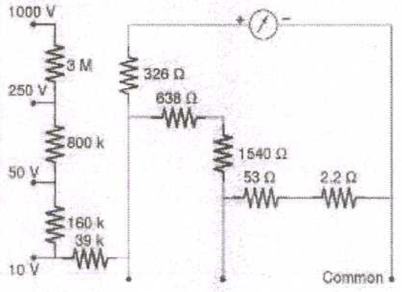


Fig. 4.38 DC voltmeter section of a multimeter

fig+exp. 3+4. | ~~4~~. 3+4 | 7. | 7

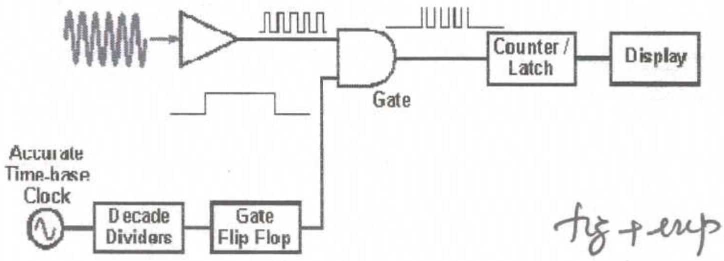
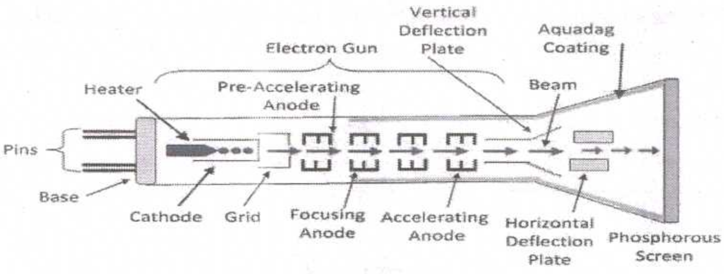
<table>
<tr><td>IV.b.</td><td>

fig + exp. (4+4)</td><td>4+4</td><td>8.</td><td>8.</td></tr>
<tr><td></td><td>UNIT –II</td><td></td><td></td><td></td></tr>
<tr><td>V.a.</td><td>

Cathode Ray Tube

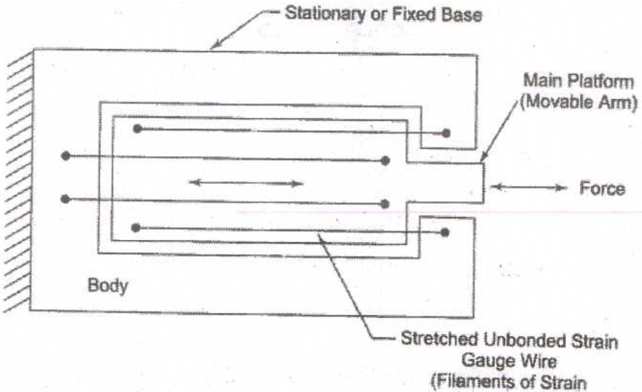
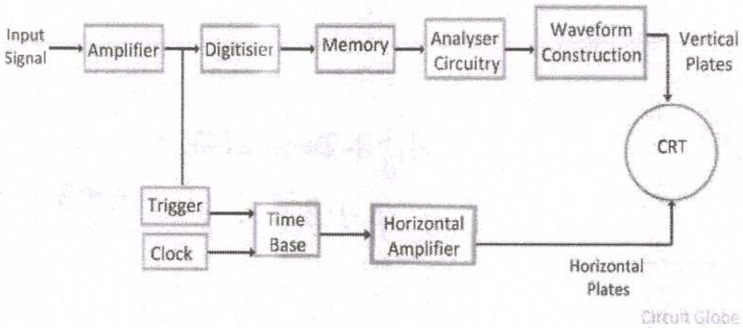
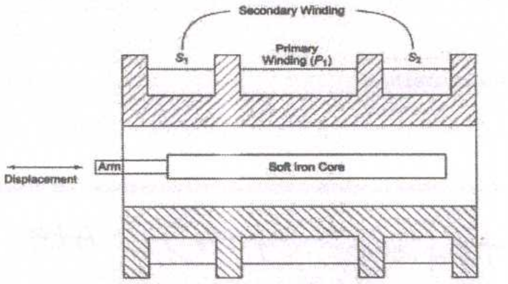
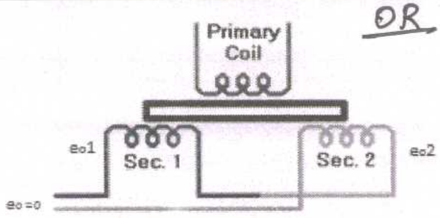
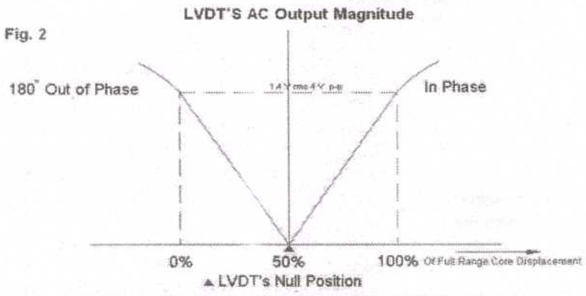
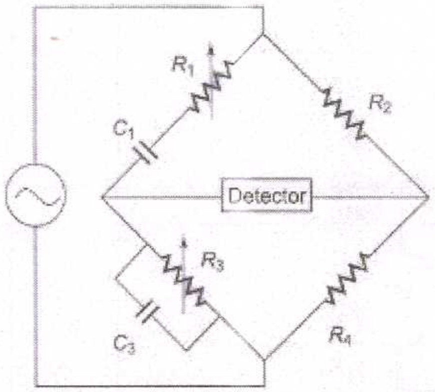
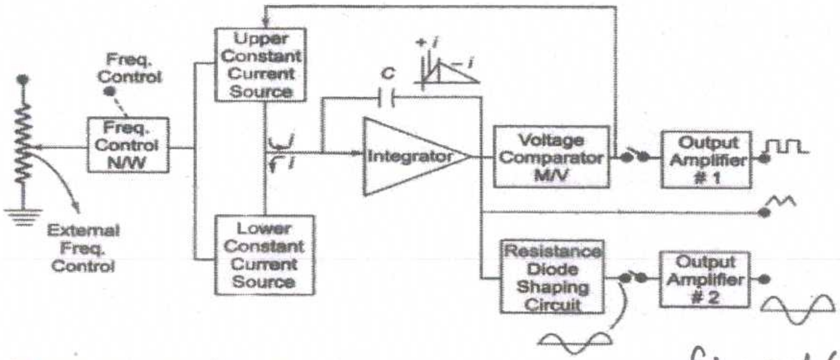
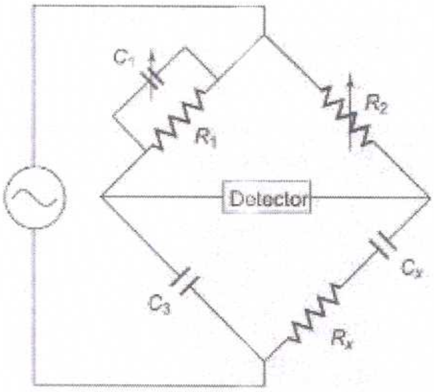
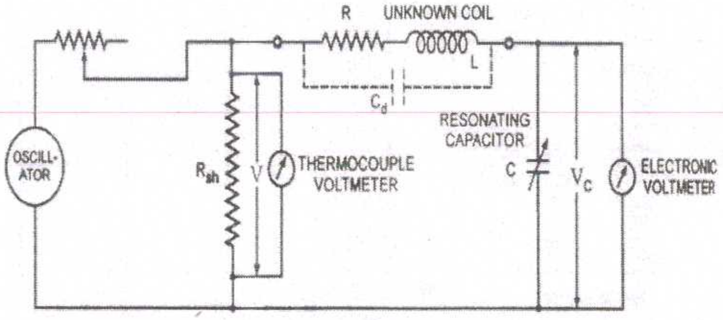
fig + exp. (4 + 4).</td><td>4+4</td><td>8.</td><td>8</td></tr>
<tr><td>V.b.</td><td>

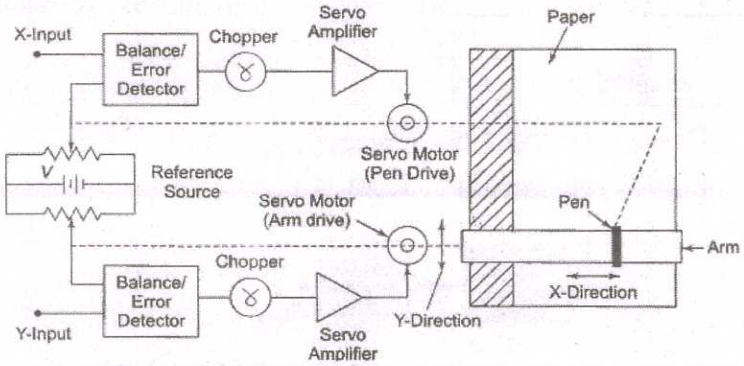
Fig. 13.3 Unbonded Strain Gauge

fig + exp. 3 + 4.</td><td>3+4</td><td>7.</td><td>7</td></tr>
<tr><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>VI. a.</td><td>
</td><td></td><td></td><td></td></tr>
<tr><td></td><td>fig + exp. 4 + 3</td><td>4+3</td><td>7.</td><td>7</td></tr>
</table>

VI.b.	 Fig. 13.19 ■■■ Construction of a Linear Variable Differential Transducer (LVDT) OR  equal coupling with both secondaries therefore eo2 equal eo1 Any fig. 3. + Fig. 2  AC Output of Conventional LVDT Versus Core Displacement fig. 2. + exp. 3.	3+2+3	8.	8
VII.a	UNIT. III  $f = \frac{1}{2\pi\sqrt{C_1 R_1 C_3 R_3}}$ fig + Derivation. (4+3).	4+3.	7.	7

VII. b.	 Fig. 8.5 Function Generator fig + exp (5+3)	5+3.	8.	8
VIII a.	 fig + Derivation. (4+3) $R_x = \frac{R_2 C_1}{C_3}$ $C_x = \frac{R_1}{R_2} C_3$	4+3	7.	7
VIII b.	 *Circuit Diagram of a Q-meter* fig + exp (4+4).	4+4.	8.	8.

IX.a.



(fig. + exp) 5+3. 5+3 8.

IX.b.

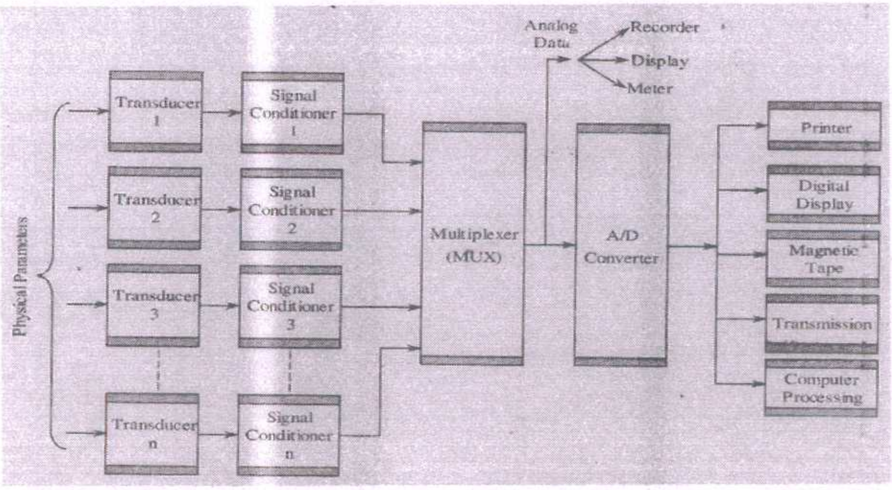


fig 2.1 Genralized Data Acquisition System

fig + exp (4+3. 4+3 7 7.

X.a.

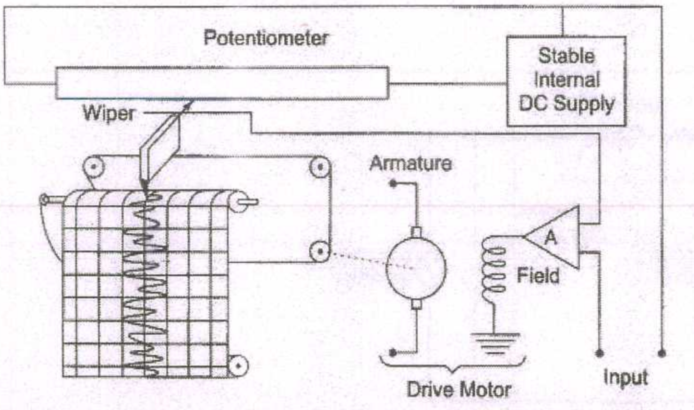
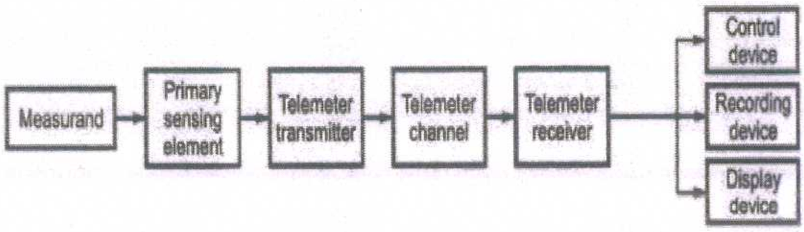


Fig. 12.4 Block Diagram of Self-Balancing Potentiometer Recorder

fig + exp. (4+4) 4+4 8. 8

X(b).	 Fig. 10.1 Block diagram of basic telemetry system fig + exp. (4+3)	4+3	7.	7.

MASTER COPY LOW QUALITY IMAGE