

name and surname: ALES LUFINKA

Always enter the answers directly into this form in the question box. If you need more space, write the answer on another piece of paper and mark the question number. Write your name and surname and attach it to the form.

question scoring

1 Methodology of the experiment - draw block diagram 3 | 3

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    graph LR
      Exciter[exciter] --> TestedObject[tested object]
      TestedObject --> MeasurementDevice[measurement device]
      MeasurementDevice --> Exciter
      TestedObject --> Exciter
  
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2 Hydraulic exciters - operation principles, field of application, advantages and disadvantages. 3 | 3

2 possibilities - hydraulic linear engine or rotary engine
 * energy is a hydraulic pressure oil

(+) - oil is incompressible
 high forces and speed, great dynamics
 static or dynamic loading

(-) - high price, difficult assembly, unfriendly medium - oil

3 Measurement device with separated sensor and amplifier, measurement of multiple channels. 4 | 0

Draw block diagram and write advantages, disadvantages.

Sorry, I don't know.

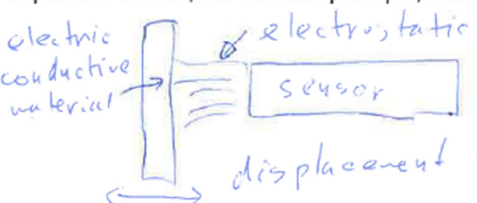



4 Write principle of protection against capacitive and inductive path of electromagnet. interference. 3 | 3

parasitic capacitive or mutual inductance are inversely proportional to their distance \Rightarrow long distance between mains and signal cables.

5 Write four basic parameters of the signal amplifiers. 4 | 2

- input range
- gain
- ?
- ?

!!!! ROTATE THE FORM - THE TEST CONTINUES ON THE OTHER SIDE !!!!

<p>6 What is the Nyquist - Shannon's sampling theorem? What it is used for?</p> <p>N-S theorem: Sampling Frequency $> 2 * \text{max. signal frequency}$.</p> <p>It is used for setting of sampling frequency for periodic signals.</p>	<p>4 4</p>
<p>7 Capacitive sensor, the function principle, basic properties, advantages, disadvantages.</p>  <p>displacement is converted to the change of capacity.</p> <p>⊕ non-contact, low price ⊖ small distance, only for conductive materials</p>	<p>2 2</p>
<p>8 Write the self-compensating strain gauge function principle.</p> <p style="text-align: center;">?</p>	<p>2 0</p>
<p>9 Torque sensors - the sensor function principle, two variants of solution.</p> <p>torque is transformed into torsional deformation</p> <p>1)  - two 45° glued strain gauge sensors</p> <p>2)  - shear deformed piezoelectric sensor</p>	<p>2 2</p>
<p>10 Temperature non-contact measurement metode, the sensor function principle.</p> <p>the infrared radiation is measured by CCD sensor.</p> <ul style="list-style-type: none"> - point sensor - area sensor 	<p>3 3</p>
<p>test score - grade table: 30-27 = 1, 26-23 = 1-, 22-19 = 2, 18-15 = 2-, 14-11 = 3</p>	<p>test score (max. 30) 22</p>
	<p>test grade (2)</p>
<p>1-present. (2) 2-present. (1)</p>	<p>oral part grade (1-)</p>
<p>date: February 30 final grade: (2) teacher's signature: </p>	

Note:

1) Both parts of the exam must be pass. If one part is not pass, the whole exam is not pass. Only the no-pass part of the exam will be repeated in the next term.

2) Test grade: 2, oral part grade: 1- (i.e. 1.5), average: $(2 + 1.5)/2 = 1.75$ and that is exactly halfway between 1- and 2. The final grade is 2 because the test grade is more important.

Examples:

test	1	2	3	2	1-	4
oral	2	1	1	1-	2	1
final	1-	1-	2	2	1-	no pass