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BIEEE-004

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B.Tech. ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

June, 2013

BIEEE-004 : MECHATRONICS

Time : 3 hours *Maximum Marks : 70*

Note : Attempt ***any seven*** questions. **All** questions carry ***equal marks.*** Assume missing data, if any.

1. (a) What is the difference between : 5

(i) Active and Passive Transducers

(ii) Output and Inverse Transducers ?

(b) For a transducer describe it's Input characteristics, Transfer characteristics and Output characteristics. 5

2. Explain the construction and principle of working of a Linear Variable Differential Transformer (LVDT). Explain how the magnitude and the direction of the displacement of the core of an LVDT is detected. 10

3. Determine the input impedance, the O/P impedance and the voltage amplification for a non-inverting amplifier with $R_1 = 100\ k\Omega$, $R_f = 100M\Omega$. The OPAMP parameters are $\gamma_{ia} = 100k\Omega$, $\gamma_{oa} = 100\Omega$ and the open-loop gain is 10^5. **10**

4. (a) Describe different types of mechanical switches. **5**

   (b) What is an electrical actuation system ? Enumerate the different electrical actuators. **5**

5. Describe working of a hydraulic actuator. Compare hydraulic and pneumatic system. **10**

6. Describe a generalized digital data acquisition system with a diagram. Give it's various components and their functions also. **10**

7. Describe the Memory Read Instruction Cycle of Intel 8085 Microprocessor with example and timing diagram. **10**

8. Describe briefly 8051 micro-controller with it's block diagram. Explain its various I/O ports also in brief. 10

9. Explain the Automobile Engine Control System. Explain its different components and specific criteria used for engine control. 10

10. Write short note on ***any two*** of the following : **2x5=10**

(a) Computer printer

(b) VCR

(c) NC machine.