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BIEEE-004

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

June, 2016

00736

BIEEE-004 : MECHATRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) Explain the sensor, signal conditioner and display elements in the measurement of pressure using transducer. 7

(b) Explain the various elements that might be present in a filtering and data acquisition system. 7

2. (a) Explain the significance of the following information given in the specification of transducer : 7

(i) A capacitance fluid pressure transducer. Accuracy : ± 1% of displayed reading.

(ii) Inductive displacement transducer. Linearity : ±1% of rated load.

(b) What will be the change in resistance of an electrical resistance strain gauge with a gauge factor of 2·1 and resistance of 50 Ω if it is subject to a strain of 0·001 ? 7

3. Describe the following in detail : *2×7=14*

(a) Kinematic Chains

(b) Ratchet and Pawl

4. (a) List out some industrial applications of transducers. 7

(b) A pneumatic system is operated at a pressure of 1000 kPa. What diameter cylinder will be required to move a load requiring a force of 12 kN ? 7

5. (a) Explain the principle of operation of solenoid operated solid state switch. 7

(b) Enumerate the advantages, disadvantages and application of solenoid operated solid state switch. 7

6. (a) How does a microcontroller differ from a microprocessor ? Support your answer with basic block diagrams. 7

(b) Describe the basic principles of stepper-motors and servo-motors. 7

7. Write short notes on any ***two*** of the following : *2×7=14*

(a) VCR

(b) NC Machines

(c) Automobile Engine Control