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BIEEE-004

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

Term-End Examination

00236

June, 2015

BIEEE-004 : MECHATRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted. Assume missing data, if any.*

1. (a) A 6-bit converter gives an output voltage of 14·250 volts for an input of 100110. What is the step size, the full range voltage and the percentage resolution ? *5*

(b) What is the binary addition and subtraction of 110011 and 100110 ? *5*

2. (a) Briefly explain the desired qualities of a hydraulic actuation system. *5*

(b) Explain what is meant by sequential control and illustrate your answer by an example. *5*

3. (a) Describe the functioning of a pilot-operated check valve. *5*

(b) Differentiate between a pressure relief valve and a pressure reducing valve. *5*

4. (a) Explain bit, byte, word and instruction. How many bytes make a word of 32 bits ? 5

(b) Compare micro-computer and micro-processor. 5

5. (a) Explain the operation of Lever Type and Push Type mechanical switches. 5

(b) Describe the working of a rotary potentiometer. 5

6. Explain the following with the help of block diagrams : 5+5

(a) Open Loop Control System

(b) Closed Loop Control System

7. (a) Explain the principle of operation of an Ultrasonic Range Sensor with the help of a neat diagram. 5

(b) What are the main advantages of a capacitive proximity switch over the inductive proximity switch ? 5

8. (a) Describe the components of a continuous sensing system with a neat diagram. 5

(b) Explain the working of Wrist Sensors. 5

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

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Fax Machine

(b) NC Machine

(c) Actuators and Switches

(d) Computer Printer