Autotronics VTU CBCS Question Paper Set 2018

USN | | | | | | | | | | |

10AU82

Eighth Semester B.E. Degree Examination, June/July 2017
Autotronics

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Define mechatronics. Briefly explain the evolution of mechantronics. **(10 Marks)**
b. Explain open loop and closed loop control system with suitable examples. **(10 Marks)**

2 a. Briefly explain the classification of transducers. **(06 Marks)**
b. What is hall effect? Explain the principle of hall effect with neat sketch. **(08 Marks)**
c. Explain capacitive type proximity sensor. **(06 Marks)**

3 a. Write a symbolic representation of thyristor and explain its characteristics. **(10 Marks)**
b. With a neat sketch. Explain the principle of working of permanent magnet DC motor. **(10 Marks)**

4 a. Define signal conditioning. What are the necessity for signal conditioning? **(04 Marks)**
b. Explain balance mode of wheat-store bridge and hence deduce the expression for change in output voltage. **(10 Marks)**
c. With block diagram, explain data acquisition system. **(06 Marks)**

PART – B

5 a. With the help of symbol and truth table. Explain AND, OR, NOR and NAND gates. **(10 Marks)**

b. Compute the following :
i) $(654)_{10} = (\quad)_8$
ii) $(1101{\cdot}11)_2 = (\quad)_{10}$
iii) $(F9BD)_{16} = (\quad)_{10}$
iv) Add 10011 and 100
v) Sub 0011 from 1101. **(10 Marks)**

6 a. Explain with a block diagram, the architecture of Intel 8085A processor. **(14 Marks)**
b. Write a note on machine language and assembly language. **(06 Marks)**

7 a. What are buses? Explain the main features and functions of a data bus, address bus and control bus. **(10 Marks)**
b. What is system clock and what are its functions? **(10 Marks)**

8 a. Explain temperature monitoring system with a block diagram. **(10 Marks)**
b. Explain with a suitable sketch any one general applications of mechatronics in automobile. **(10 Marks)**

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PART – A

1 a. Explain the meaning of the term mechatronics. With respect to multi disciplinary scenario. Briefly discuss the origin and evolution of mechatronics. **(10 Marks)**

b. Explain with the block diagram how a microprocessor control system is used to control the focusing and exposure in an automatic camera. **(10 Marks)**

2 a. Explain how sensing is achieved by an incremental optical encoder. **(08 Marks)**

b. Briefly explain the working principle of the following:
i) Light sensor
ii) Hall effect sensor **(12 Marks)**

3 a. Explain the principles of brushless D.C. permanent magnet motor with a neat sketch. **(10 Marks)**

b. Differentiate between a diode, thyristor and transistor. **(06 Marks)**

c. With a neat sketch, explain the solenoid. **(04 Marks)**

4 a. With a block diagram, explain the working principle of data acquisition system. **(10 Marks)**

b. Explain the principle of ADC of signals. **(10 Marks)**

PART – B

5 a. Explain the evolution of microprocessors. **(06 Marks)**

b. What are logic gates? Discuss AND and OR gates with their truth tables for two inputs. **(08 Marks)**

c. Convert the following:
i) $(10.7)_{10} = (\_\_\_\_\_)_2$
ii) $(1\ A5D)_{16} = (\_\_\_\_\_)_{10}$
iii) $(436)_8 = (\_\_\_\_\_)_2$ **(06 Marks)**

6 a. Explain with a neat sketch, pin configuration of Intel 8085 microprocessor. **(10 Marks)**

b. What are microcontrollers? Explain the general form of a microcontroller. **(10 Marks)**

7 a. With a neat flow chart, discuss the programming process. **(10 Marks)**

b. Write a program to find the largest of a byte in the array of numbers. **(10 Marks)**

8 a. Distinguish between instruction cycle, machine cycle and T-state. **(10 Marks)**

b. Draw and explain the timing diagram memory operation. **(10 Marks)**

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