Register Number……

B.E., DEGREE EXAMINATIONS: NOV/DEC 2012

Seventh Semester

MECHATRONICS ENGINEERING

MCT120: Design of Mechatronics System

Time: Three Hours **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. Mechatronics is a methodology used for the optimal design of _____ products

a) Electromechanical b) electronics c) mechanical d) electrical and electronics

2. In closed loop system the control action is

a) Dependent on the output b) Independent on the output

b) Partially dependent on the output d) none of the above

3. Self-generating transducers are

a) Passive transducers b) active transducers

c) primary transducers d) secondary transducers

4. The _____ is the physical path over which a message travels.

a) Protocol b)Medium c)Signal d)All the above

5. Which topology requires a central controller or hub?

a) Mesh b)Star c)Bus d)Ring

6. Encoders are used for measurement of _____

a) Force b) displacement c) no .of turns d) weight

7. CD player contains _____ motor

a) Servo motor b) stepper motor c) DC servo motor d) induction motor

8. pH of sea water is

a) 7 b) 8 c) 9 d) 11

9. Sensors are _____device.

a) Active b) passive c) both a and b d) none of the above.

10. _____material used for Micro Actuator manufacturing

a) Silicon b) steel c) clay d) black sand

PART B (10 x 2 =20 Marks)

11. Define Mechatronics.
12. Define Ergonomics.
13. What is meant by Communication Protocol?
14. What is the purpose of Handshake control?
15. Write any four components of DAC system?
16. Write four important hardware components required for strain gauge weighing system case study?
17. What are the various movements of robots?
18. What is meant by operating system?
19. What is a Fuzzy control?
20. What is meant by Artificial Intelligence?

PART C (5 x 14 =70 Marks)

21. a) Briefly explain the mechatronics system components.

(OR)

b) Compare the traditional design approach and Mechatronics design approach.

22. a) With neat sketch, explain the bus structure of IEEE 488 interface.

(OR)

b) With neat sketch, explain the bus structure of RS232 interface.

23. a) What is real time interfacing? Explain briefly the elements of a data acquisition and control system with neat sketch.

(OR)

b) With neat sketch, explain the principle and operation of rotary optical encoders.

24. a) Discuss the design aspects of a pick and place robot, in terms of the various mechatronic elements involved.

(OR)

b) Explain the design of mechatronic based pH control system.

25. a) Considering a CNC Machine tool as a mechatronics system, discuss the design of considerations and design solutions to the same.

(OR)

b) Explain in detail about MICRO Actuators.

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