**REG.NO:**

**SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLEGE**

**ACADEMIC YEAR 2014-2015/ODD SEMESTER**

**MODEL EXAMINATION**

SET-B

**DEPARTMENT OF MECHANICAL ENGINEERING**

**SUBJECT CODE/TITLE:**  **ME 2204 -MECHATRONICS**

**YEAR/SEM:** IV/VII **DATE:**

**DURATION:** 180 Mins **MAX.MARKS:** 100

 **PART-A 10x2=10 Marks**

1. What is hysteresis?

2. State the dynamic characteristic of simplified measuring system?

3. What is MOSFET? Stable its fractures?

4. State the objectives of DCVs? Classify them?

5. How are micro controllers describe?

6. Mention various features of digital controllers?

7. List down PLC programming methods.

8. What are the factors to be considered for selecting PLC?

9. Distinguish between traditional design approach and Mechatronics approach:

10. Name the two barriers used in automatic car parking system and state its uses.

**PART-B**

11. (a) Explain the architecture of a PLC and explain about its elements. **(8)**

 (b) Explain the dynamic characteristics of transducers **(8)**

**(OR)**

12. (a) Explain the basis of ladder programming used in PLC’s **(16)**

13. (a) Compare open and closed loop system with suitable example. **(8)**

 (b) Explain the principle of various sensors used for measuring displacement. **(8)**

**(OR)**

14. (a) Explain the static and dynamic characteristics of sensors **(8)**

 (b) Explain the following: Thermistors and Piezoelectric sensors **(8)**

15. (a) Explain various types of ball and roller bearings **(8)**

 (b) Explain thyristors and triacs in detail **(8)**

**(OR)**

16. (a) What are the various types of ball bearing ? Mention the application of each type.

 (b) How will you specify a stepper motor? Explain the general characteristics of a stepper motor.

 17. (a) Derive the differential equation governing the mechanical system of an electric motor. (8)

 (b) Explain the characteristics of PID controller. **(8)**

**(OR)**

18. (a) Explain building blocks for thermal systems. **(6)**

 (b) Explain electronic proportional integral (PI) controller with necessary circuit diagrams. **(10)**

19. Design a pick and place robot using mechatronics elements and explain about the robot control.**(16)**

**(OR)**

20. Design a mechatronics system for a automatic camera and explain the various mechatronics elements. **(16)**