Reg. No. : | | | | | | | | | | | | |

# L 1494

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Sixth Semester

Mechanical Engineering

ME 341 — HYDRAULIC AND PNEUMATIC CONTROLS

(Common to Mechatronics Engineering)

Time : Three hours  Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List out four desirable properties of hydraulic oils.

2. Draw the symbol of pressure relief valve.

3. Give the importance of safety in hydraulic circuits.

4. What is the function of accumulators?

5. What is the advantage of using sequencing circuit?

6. List the different types of actuators.

7. Name any two electro pneumatic elements.

8. What is the function of logic circuits?

9. List the parts present in a PLC.

10. Define "Low cost automation".

PART B — (5 × 16 = 80 marks)

11. (a) Explain the working of a radial piston pump with a neat diagram. Write an expression for the theoretical displacement per revolution of the crank.

Or

(b) Describe the working of various hydraulic valves with suitable sketches.

12. (a) With the help of circuit diagrams, illustrate the application of accumulators.

Or

(b) Sketch and explain the hydraulic circuit commonly used in milling machines.

13. (a) Draw and explain the working of a synchronizing circuit.

Or

(b) Design a hydraulic circuit for the operation of a fork lift.

14. (a) Explain the constructional features of pneumatic cylinder. What are the functions of FRL unit?

Or

(b) Explain with a neat sketch the construction and operation of an electro-pneumatic servo valve.

15. (a) Design a pneumatic circuit for the following sequence. A+ A- B+ B-, where A is extension and B is retraction.

Or

(b) Discuss the selection criteria for pneumatic components.