B.TECH. DEGREE EXAMINATION, MAY 2014

Sixth Semester

Branch : Mechanical Engineering

ME 010 606 L 05—INDUSTRIAL HYDRAULICS (Elective I) (ME)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 3 marks.

1. List the advantages of pneumatic devices.

2. What is a swash pump ?

3. What is the application of a non-return valve ?

4. What is the significance of a hydraulic circuit ?

5. Define a hydraulic fluid.

(5 × 3 = 15 marks)

Part B

Answer all questions.
Each question carries 5 marks.

6. Discuss all the characteristics of hydraulic pumps.

7. With neat sketch, explain a Piston pump.

8. Explain a sequence valve and its applications.

9. Give the details of operation of a pressure sequence valve.

10. Explain the variations in viscosity and surface tension in hydraulic fluids.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. Discuss all mechanisms of power transmission in hydraulic pumps. (12 marks)
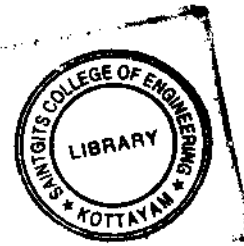
Or

12. Explain the symbols and nomenclature of pneumatic devices. Give a practical example.

(12 marks)

13. With neat sketches, explain :

    (a) Screw pump. (6 marks)

    (b) Bent axis pump. (6 marks)

Or

14. How will you evaluate the performance of a double acting multi-displacement pump ? Explain.

(12 marks)

15. Explain the following, with neat sketches :

    (a) Counter balance valve. (6 marks)

    (b) Pressure reducing valve. (6 marks)

Or

16. Explain the function of a stop valve. Draw a flow chart for a typical flow measurement and the control using valves. (12 marks)

17. Discuss the basic concepts of drawing a hydraulic circuit. How will you optimize a circuit ? Explain.

(12 marks)

Or

18. With neat sketch, explain the principle and working of an unloading valve. What are its applications ? (12 marks)

19. Draw and explain the hydraulic circuit of a power steering. (12 marks)

Or

20. Draw and explain the principle of a pneumatic hammer. Explain a method of efficiency estimation. Write all the practical applications.

(12 marks)

[5 × 12 = 60 marks]