Question Paper Code : 71858

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fifth Semester

Mechanical Engineering

ME 2305/ME 55/ME 1305/080120027/10122 ME 506 — APPLIED HYDRAULICS AND PNEUMATICS

(Common to Sixth Semester Mechatronics Engineering and Fifth Semester Mechanical and Automation Engineering)

(Also common to 080120027 – Hydraulics and Pneumatics Systems)

(Regulation 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write any four applications of fluid power systems.
2. Define Darcy-Weisbach equation.
3. Write about positive displacement pumps.
4. What is tandem cylinder?
5. Explain briefly the non-separator type gas loaded accumulator.
6. What is ladder diagram?
7. What is the function of pressure regulator in a pneumatic system?
8. What is a sequencing circuit?
9. What is fluidics?
10. What are the basic elements of PLC?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Briefly explain the types of fluid power system. (10)

(ii) List out the properties of hydraulic fluids. (6)

Or

(b) (i) Explain the various fluids used in the hydraulic system with advantages and disadvantages. (10)

of internal gear pump.

Or

(b) (i) Explain with suitable sketch the Working principle of telescopic cylinder. (12)

(ii) What is power pack? Give its advantages. (4)

13. (a) Explain the following circuits with neat sketch.

(i) Meter-in

(ii) Meter-out

(iii) Bleed-off. (16)

Or

(b) Write down the various types of accumulator and explain working of bladder type accumulator with a suitable sketch. (16)

14. (a) Draw an pneumatic circuit by cascade method for following sequence of operation: $A^+ B^+ B^- A^-$ where *A* and *B* are the two cylinders and + indicates extension and – indicates retraction of the cylinder. (16)

Or

(b) Briefly explain FRL unit with neat sketch. (16)

15. (a) (i) What is PLC? Explain the applications of PLC in Fluid controls. (8)

(ii) List five things that cause a noisy in a pump. (4)

(iii) What is tree-branching chart? (4)

Or

(b) Briefly explain with neat sketch the construction and working principle of proportional pressure relief valve and proportional direction control valve. (16)

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