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22/5/13FW

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Question Paper Code : 21571

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Mechanical Engineering

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

(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. List the applications of fluid power in agriculture and aviation industries.
2. Write the procedure to calculate the pressure drop in hydraulic circuits
3. Differentiate double rod and tandem cylinder.
4. Why do screw pumps generate less noise while running?
5. Differentiate fixed and variable displacement pumps.
6. List the basic arrangements in hydrostatic drives.
7. Mention advantages of air motor over electric motor.
8. What do you mean by logic control?
9. What is a ladder diagram?
10. Define low cost automation.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the various types of fluid power system. (8)
- (ii) Write the advantages of fluid power systems. (8)

Or

- (b) Write notes on
- (i) Neutralization number (8)
 - (ii) Frictional losses in laminar and turbulent flow. (8)
12. (a) (i) Explain the construction and working of bent axis type piston pump with neat sketch. (12)
- (ii) Write short notes on lobe pump. (4)

Or

- (b) (i) Explain any three types of special cylinders used in hydraulics with neat sketch. (12)
- (ii) What is cylinder cushion? (4)
13. (a) (i) Explain the construction of pressure relief valve with neat sketch. (8)
- (ii) Design the hydraulic press circuit using unloading valve with sketch. (8)

Or

- (b) (i) Explain any two types of accumulator circuits with sketch. (8)
- (ii) Design the circuit to speed up the extending speed of a double acting cylinder with suitable circuit. (8)
14. (a) (i) Write the procedures for selection of filter, regulator and lubricator. (12)
- (ii) Write a short note on mufflers. (4)

Or

- (b) Design an electro pneumatic circuit using cascade method for the following sequence : $A^+B^+B^-A^-C^+C^-$. (16)
15. (a) Explain the various types of pneumatic switching elements with simple sketch. (16)

Or

- (b) Explain the installation procedures for various hydraulic systems and its maintenance Procedures. (16)