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Question Paper Code : 31571

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 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. Give the advantages of fluid power system.
2. Draw the symbol of pressure relief valve.
3. What are the main advantages of gear motors?
4. What is a pressure compensated vane pump, and how does it work?
5. What is the function of intensifiers?
6. What is meant by sizing of accumulators?
7. What is the advantage of using sequencing circuit?
8. Where speed control circuits are required?
9. What is the advantage of using servo systems?
10. List out any two PLC applications in fluid power control.

PART B — (5 × 16 = 80 marks)

11. (a) Describe the applications of fluid power system and list the main components required for a power pack with circuit.

Or

- (b) State and explain the types of fluid power control systems with its advantages.

12. (a) Draw a neat sketch of variable discharge axial flow piston pump. Also explain its construction and operation with how to calculate minimum and maximum discharge. Give its graphical symbol.

Or

- (b) Classify the types of hydraulic cylinders. Describe the working of a double acting tandem cylinder and gear motor. Give its graphical symbols.

13. (a) Sketch and explain commonly used 3-position 4-way direction control valves. Also state the applications for closed center, open center and tandem center valves.

Or

- (b) With the help of circuit diagrams. Explain the applications of accumulator. Also illustrate its types.

14. (a) Explain the constructional features of filter, regulator and lubricator with a sketch.

Or

- (b) Design and draw a sequential circuit for the operation of two cylinders X and Y using cascade method.

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

Or

- (b) State the applications of fluidic devices Explain the importance of electro hydraulic servo systems and proportional valves.