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**Question Paper Code : 80850**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Fifth Semester

Mechanical Engineering

ME 2305/ME 1305/10122 ME 506/080120027/ME55 — APPLIED HYDRAULICS  
AND PNEUMATICS

(Regulations 2008/2010)

(Common to Automobile Engineering, Mechanics and Automation Engineering and  
Mechatronics Engineering)

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. Distinguish between fixed displacement and variable displacement pumps.
4. List the merits and demerits of gear pump.
5. Draw the symbol of shuttle valve and write its use.
6. Why flow control valve is essential in hydraulic circuits?
7. What is the advantage of using sequencing circuit?
8. Where speed control circuits are required?
9. What is fluidics?
10. What are the basic elements of PLC?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the applications of fluid power system with example, list its merits and demerits. (8)
- (ii) Explain the fluid characteristics of fluid used in hydraulic system. (8)

Or

- (b) (i) Write short notes on
- (1) Laminar flow
- (2) Turbulent flow
- (3) Pascal's law applications. (6)
- (ii) List the various valves and fittings used in hydraulic systems. Explain their associative losses and its preventions. (10)
12. (a) (i) How pumps are classified? (6)
- (ii) Explain with a neat sketch the construction and working principle of internal gear pump. (10)

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) (i) Explain the construction and working of a pilot operated pressure relief valve with neat sketch. (8)
- (ii) Briefly explain the various electrical devices used in the control of fluid power systems. (8)

Or

- (b) (i) Explain with the help of a circuit, how pressure intensification is done in circuit. (8)
- (ii) Write short notes on 'sizing of Accumulators'. (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) 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.

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