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Question Paper Code: 31756

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Fifth Semester

Mechanical Engineering

01UME506 – APPLIED HYDRAULICS AND PNEUMATICS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What is fluid power?
2. Name three fire resistant hydraulic fluids.
3. List the applications of hydraulic actuators.
4. How is single acting cylinder retracted?
5. What is the function of pressure reducing valve?
6. What is an intensifier and when is it used in hydraulic circuit?
7. What is the use of shuttle valve?
8. Differentiate meter-in and meter-out speed control circuits.
9. What is fluidics?
10. Define Coanda effect.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain in detail about five basic types of fluid power systems. (16)

Or

(b) Discuss the properties which a hydraulic fluid should possess. (16)

12. (a) Draw and explain the construction and working of a bent axis type piston pump. Derive the theoretical discharge of the pump. (16)

Or

(b) With a neat sketch explain the working principle of gear pump. (16)

13. (a) With the help of a circuit, describe the application of the pressure reducing valve. (16)

Or

(b) Discuss in detail about any two types of accumulator. (16)

14. (a) Write a short note on compressor. With a neat sketch explain the working principle of piston type compressor. (16)

Or

(b) In a pneumatic drilling circuit, cylinder *A* is used to clamp the work piece and cylinder *B* is used for drilling. The sequence of operations is: work piece is clamped, drilled, drill retracted and work piece is unclamped. Design a pneumatic sequencing circuit using cascade method. (16)

15. (a) Design a basic pneumatic circuit and explain it in detail. (16)

Or

(b) An electro-hydraulic circuit uses two pressure switches and a solenoid operated direction control valve for continuous reciprocation of the hydraulic cylinder. Develop circuit with a suitable ladder diagram. (16)