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Question Paper Code: 35706

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. State the four primary functions of 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. How does a pilot operated check valve differ from a simple check valve?
7. Write the difference between a strainer and filter?
8. Name the three types of positive displacement compressors that are commonly used in industry.
9. What is fluidics?
10. List any three causes for low pressure in hydraulic circuits.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Discuss the factors to be considered in the selection of hydraulic fluids. (8)
(ii) Explain the factors which affect the selection of pumps. (8)

Or

- (b) (i) How is Reynolds number determined? (4)
(ii) Draw fluid power symbols of any six different types of valves. (12)
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) Explain the working principle of piston motor with a neat sketch. Also write its advantages and disadvantages. (16)
13. (a) Classify the ways of applying flow control valves? Differentiate meter-in and meter-out controls. (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) (i) With a block diagram, describe the working of an electro hydraulic servo system. (12)
(ii) Compare electro-hydraulic servo valves and proportional hydraulic valves. (4)

Or

- (b) Brief about the operations of different fluidic devices. (16)