Reg. No. : | | | | | | | | | | |

Question Paper Code: 35706

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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. When hydraulics is preferred over pneumatics? Why?
2. Name three fire resistant hydraulic fluids.
3. Why the centrifugal pump is not used in the fluid power system?
4. How is single acting cylinder retracted?
5. What is the function of pressure reducing valve?
6. What is the use of shuttle value?
7. Why filters are used in pneumatic systems?
8. Differentiate meter-in and meter-out speed control circuits.
9. What is fluidics?
10. List any three causes for low pressure in hydraulic circuits.

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) Classify the ways of applying flow control valves? Differentiate meter-in and meter-out controls. (16)

Or

(b) (i) With a simple sketch, explain the working of a 4/2 direction control valve. (6)

(ii) With a suitable circuit, illustrate the application of accumulator as auxiliary power source. (10)

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

Or

(b) Explain the important consideration that must be taken into account when designing a pneumatic circuit? (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) 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)