

B.E. DEGREE EXAMINATIONS: APRIL/MAY 2012

Sixth Semester

MECHANICAL ENGINEERING

MEC116: Fluid Power Systems

Time: Three Hours

Maximum Marks: 100

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. Hydraulic systems are preferred for
 - A) Low load applications.
 - B) High load applications.
 - C) Low pressure applications.
 - D) None of the above.
2. The pump used for fluid transportation application is
 - A) Centrifugal pump.
 - B) Gear pump.
 - C) Vane pump.
 - D) Gerotor pump.
3. Pilot operated check valve is a
 - A) Direction control valve
 - B) Pressure control valve
 - C) Flow control valve
 - D) none of the above
4. A pressure reducing valve is a
 - A) Normally opened valve
 - B) Normally closed valve
 - C) Either A or B
 - D) None of the above
5. A device which converts low pressure fluid power into high pressure fluid power is called
 - A) Intensifier
 - B) Cylinder
 - C) Accumulator
 - D) Pump
6. A device that stores the potential energy of an incompressible fluid is called
 - A) Accumulator
 - B) Hydraulic cylinder
 - C) Pressure intensifier
 - D) Pressure booster
7. A device which is used to control the noise caused by the exhausting air stream is called
 - A) Muffler
 - B) Lubricator
 - C) Pneumatic cylinder
 - D) None of the above
8. Quick exhaust valve is fitted
 - A) Nearer to the cylinder port
 - B) Away from the cylinder port
 - C) Nearer to the relief valve
 - D) None of the above
9. Limit switches, open and close circuits when they are actuated
 - A) at the end of extension stroke
 - B) at the end of retraction stroke
 - C) either at the end of extension or retraction stroke
 - D) None of the above
10. A device used to control time duration of a working cycle is called
 - A) Timers
 - B) Relays
 - C) Solenoids
 - D) Pressure switch

PART B (10x2=20 Marks)

11. Differentiate hydraulics and pneumatics?
12. What is meant by positive displacement pump?
13. Draw the symbol for pressure relief valve.
14. What is meant by simple check valve?
15. What is the function of the pressure switch?
16. Define actuator.
17. What is the purpose of a pressure regulator?
18. What is the use of surge tank in pneumo hydraulic circuit?
19. What is a solenoid?
20. What are the advantages of fluidic elements?

PART C (5x14=70 Marks)

21. a) Draw and explain the working of unbalanced vane pump and external gear pump with neat sketch.

(OR)

- b) Draw and explain the working of cylinder cushioning mechanism and telescopic cylinder with neat sketch.

22. a) Draw and explain the working of counterbalance valve circuit and pressure sequencing valve with neat sketch.

(OR)

- b) Draw and explain the working of check valve, pilot operated check valve, 4×3 direction control valve with neat diagram.

23. a) Explain any two application of accumulator with neat circuits.

(OR)

- b) Explain the working of two hand push button safety circuits with neat sketch.

24. a) Explain the working of air filter and regulator with neat diagram.

(OR)

- b) Explain the working of air-oil pressure intensifier circuit with neat sketch.

25. a) Design a system using cascade method in which a cylinder A is used to clamp the work piece, cylinder B is used for punching and cylinder C removes the work piece from the station.

(OR)

b) Explain the construction of PLC with block diagram.
