



B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2012

MECHANICAL ENGINEERING BRANCH

FIFTH SEMESTER - (REGULATION 2004)

ME 372 – HYDRAULICS AND PNEUMATICS

24

Time: 3 hr

Max. Mark: 100

PART- A (10X2 = 20 Mark)

1. State the advantages of Fluid Power Systems.
2. Name TWO reasons for considering the use of pneumatics instead of hydraulics.
3. What is the advantage of screw pump?
4. Draw the symbol of mechanically actuated spring offset, 2 position 3 way valve.
5. What is fail safe circuit?
6. What is meant by regenerative in hydraulic circuits?
7. Name three types of compressors.
8. What is the difference between moving part logic and fluidic devices?
9. What is the advantage of PLC over microprocessor controlled circuits?
10. What is the difference between a strainer and filter?

PART- B (5 X16 = 80 Mark)

- 11.a (i) List the primary functions of hydraulic fluid and brief on their desired properties. (12)
(ii) What is the difference between standard air and free air? (4)

12. (a) (i) Describe the working principle of variable displacement pressure compensated vane pump. (12)
(ii) State significance of compound pressure relief valve. (4)

(OR)

- (b)(i) Compare the different types of accumulators with neat sketch.

13. (a) (i) Draw hydraulic circuits for two cylinders hooked in series and in parallel to operate in synchronization and necessary condition to achieve it. (10)
(ii) Draw a hydraulic circuit for drilling machine application. (6)

(OR)

- (b) (i) Punching operation involved use of high force for shorter duration in sheet metal forming. Design a hydraulic system to perform the punching operation with use of two pumps, one having high pressure and low discharge and other having low pressure and high discharge (10)
(ii) Draw an air over oil circuit for the above mentioned punching operation. (6)

14. (a)(i) Brief on the rotary air motor and pneumatic cylinder with neat sketch. (10)
(ii) Brief on Fluidics. (6)

(OR)

- (b)(i) Discuss on the FRL unit with neat sketch.

15. (a) (i) Design a pneumatic system involving two cylinders to achieve sequence of $A^+C^+B^+B^-A^-C^+$ using cascade method.

(OR)

- (b) (i) Brief on maintenance of hydraulic and pneumatic systems.