

**Code No: B0405/D0401****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****M.Tech II- Semester Regular Examinations September, 2010****DESIGN OF HYDRAULICS & PNEUMATIC SYSTEMS****(Common to CAD/CAM, Design for Manufacturing)****Time: 3hours****Max. Marks: 60**

**Answer any five questions  
All questions carry equal marks**

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- 1.a) What are the essential components of hydraulic circuit and explain about the selection of reservoir?
- b) Differentiate between radial piston pump & axial piston pump and mention their advantages and applications.
- 2.a) Bring out the advantages and application of two-position and four-position direction control valves.
- b) What is the function of relief valve in a circuit and explain its working with a neat sketch?
- 3.a) Sketch and explain the construction and working of pressure compensated flow control valve.
- b) Explain with a neat sketch the assembly of the joints of piston rod & bush, piston rod and eye bore and piston rod and bore interface.
- 4.a) Sketch and explain the working of vane motor and mention its advantages over swash plate motor.
- b) Differentiate between gas charged accumulator and spring loaded accumulator.
- 5.a) Differentiate between static and dynamic seals. Explain the effect of seal material on the friction.
- b) Draw a hydraulic circuit diagram of a hydraulic system having a double acting cylinder which has rapid approach speed, then slow speed at the end of stroke and return speed rapidly.
- 6.a) Sketch the application of cup seals shaft seals and face seals used in practice.
- b) What are the various pneumatic cylinders used in practice and explain with a neat sketch the constructions and working of double end cylinder.
- 7.a) What are the common faults found in hydraulic system and explain the repairs of reservoir and how the oil contamination is checked?
- b) How the filter life is decided and explain the filter maintenance?
8. Answer the following:
  - a) Hydro-pneumatics
  - b) Servo-controls
  - c) Micro-processors.