R09

Code No: D0401, D5201

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II - Semester Examinations, March/April 2011
DESIGN OF HYDRAULICS AND PNEUMATICS 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 advantages of limitations of hydraulic systems over mechanical systems?
   b) What are the various properties to be considered in the selection of hydraulic fluids? [6+6]

2. a) Classify various pumps used in hydraulic system and explain working of vane pump.
   b) Describe the working of 3position 4way direction control value and mention its characteristics. [6+6]

3. a) What are the various types of linear activators used in hydraulic system and how the wear on piston rod be reduced?
   b) How the hydraulic motors are rated and derive on equation for torque of the motor? [6+6]

4. a) What are the functions of a reservoir and explain the method of selecting the capacity of reservoir?
   b) What gases are used in gas changed accumulation? Explain the reasons for not using oxygen in the accumulators. [6+6]

5. a) What are the various materials used for seals and explain the specific merits and demerits of PTFE as a seal material?
   b) Sketch and explain regenerative circuit used in practice and derive an equation for regenerated speed. [6+6]

6. a) Draw pneumatic circuit diagram using two – cylinders, one of them is single acting and other one is double acting actuated sequentially by de value.
   b) What are the advantages & limitations of pneumatic circuits over hydraulic circuits? [6+6]

7. a) How the improper speed & torque, oil leakage from the hydraulic motor be checked and rectified?
   b) What are the problems generally occurred in pneumatic compressors and mention their rectification. [6+6]

8. Answer the following:
   a) Programmable logic controllers.
   b) Low cost automation.
   c) Filters. [12]

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