

B.TECH. SEM -VII MECHANICAL 2014 COURSE (CBCS) :
WINTER - 2017
SUBJECT: INDUSTRIAL FLUID POWER

Day: **Friday**
Date: **19/01/2018**

W-2017-2312

Time **02.30 PM TO 05.30 PM**
Max Marks: **60**

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Assume suitable data if necessary.

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- Q.1** a) Explain in detail applications of fluid power system. [05]
b) What factors are considered while selecting a hydraulic fluid? Explain hydraulic fluid additives. [05]

OR

- Q.2** a) Explain effect of temperature and pressure on hydraulic fluid. [05]
b) Explain in detail different components of fluid power system. [05]

- Q.3** a) Explain construction and working of unbalanced type of the pump. [05]
b) An axial piston pump has nine piston of 15 mm diameter arranged on a 150 mm piston circle diameter. The pump was operated at a speed of 3200 rpm. and it delivered 194 liters per minute at rated pressure. Calculate the volumetric efficiency of the pump. [05]

OR

- Q.4** a) Explain construction and working of radial piston pump with neat sketch. [05]
b) What important parameters and relations are considered, while designing an accumulator? [05]

- Q.5** a) Explain construction, working and application of check valve in detail. [05]
b) Explain construction and working of pressure compensated flow control valve with neat sketch. [05]

OR

- Q.6** a) Explain function, designation and symbols of direction control valve. [05]
b) Explain function, construction and working of pressure reducing valve. [05]

- Q.7** a) A hydraulic cylinder has 60 mm piston diameter and 30 mm piston rod diameter, consumes oil at a rate of 75 lpm. It has to exert thrust of 2500 N in extension stroke and 750 N in return stroke. Calculate the power delivered in extension and retraction stroke as well as percentage rise in velocity of piston in return stroke. [05]
b) Explain motor breaking circuit with neat sketch. [05]

OR

- Q.8** a) Explain steps for selecting hydraulic cylinder for a particular application. [05]
b) Explain with neat sketch what type of hydraulic circuits are used where the motion of two or more cylinders is required to be simultaneous. [05]

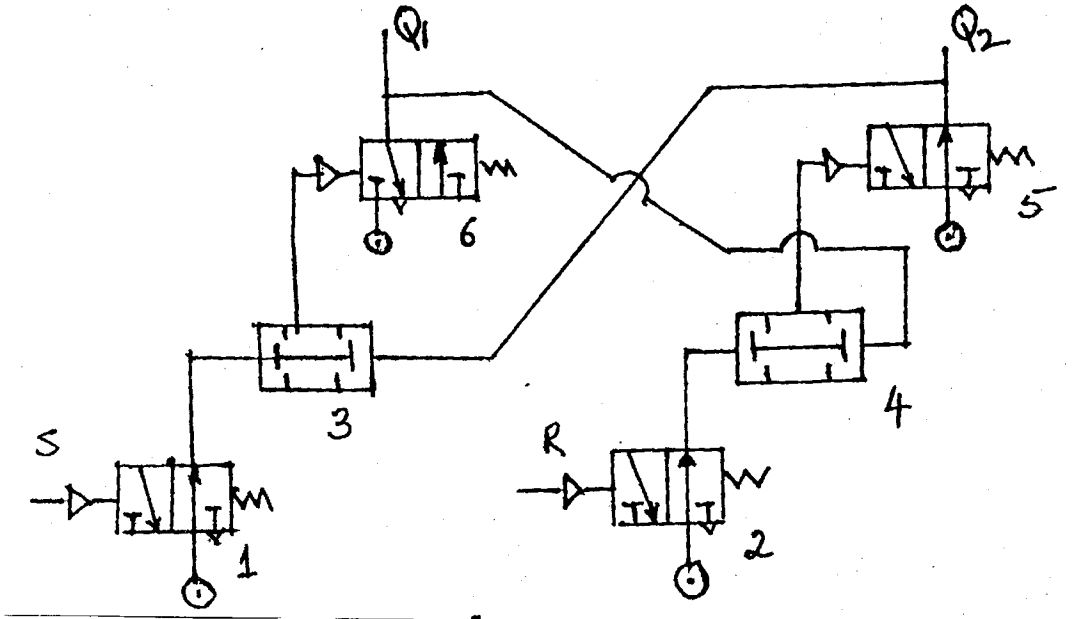
P.T.O.

- Q.9 a) Explain different types of direction control valves for control of air power. [05]
 b) Explain basic pneumatic circuit in detail. [05]

OR

- Q.10 a) Explain construction and working of vacuum pump with neat sketch. [05]
 b) Give comparison of pneumatics with hydraulic power transmissions. [05]

- Q.11 Redraw the circuit shown figure. Identify different components and analyze the circuit. [10]



OR

- Q.12 Redraw and Analyze the given circuit shown in figure [10]

