Total No. of Questions : 12]

SEAT No. :

P2663

[Total No. of Pages : 4

[5154]-33
B.E. (Mech.)
INDUSTRIAL FLUID POWER
(2008 Course) (402043) (Semester - I)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Use of Electronic calculator is allowed.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Write a short note on "ISO symbols". **[8]**

b) Classify "Hydraulic oils" in details. **[8]**

OR

Q2) a) Write a short note on "Types of pipes, Hoses, Fittings". **[8]**

b) What are the various Applications of "Industrial Fluid Power"? **[8]**

Q3) a) Explain with neat sketch "Weight Loaded Accumulator". **[8]**

b) Write a short note on "Types of pressure Intensifiers". **[8]**

OR

Q4) a) Explain with neat sketch working of "Gerotor Pump". **[8]**

b) Explain with neat sketch working of "Internal Gear Pump". **[8]**

Q5) a) Explain with neat sketch working of "Unloading Valve". **[8]**

b) Write a short note on "Types of Direction Control Valves". **[10]**

OR

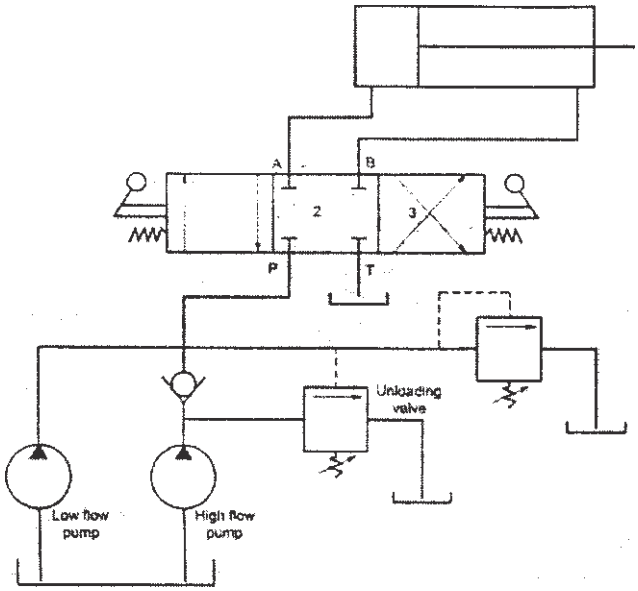
P.T.O.

Q6) a) Write a short note on "Types of Flow Control Valves". **[8]**

b) Write a short note on "Types of Pressure Control Valves". **[10]**

SECTION - II

Q7) a) Analyze the below given hydraulic circuit. **[8]**



b) Draw and explain a circuit for automatic reciprocating of a double acting cylinder using solenoid actuation. **[8]**

OR

Q8) a) Draw a typical regenerative circuit. What are its advantages? **[8]**

b) Explain the working of hydraulic vane motor with neat sketch. **[8]**

Q9) a) Explain with a neat sketch working of shuttle valve with a typical application. **[8]**

b) Explain the working of a typical air motor. **[8]**

OR

Q10)a) Explain the purpose of quick exhaust valve in pneumatic system with a circuit. **[8]**

b) Explain with a neat sketch the working of FRL unit used in pneumatic circuit. **[8]**

Q11)a) Which are the different actuators used in pneumatics? Draw symbols of them. **[6]**

b) The automatic door of a school bus is operated by a double acting cylinder. Both the opening and closing of the door is performed with a selector switch. The time duration for which the door is kept open is decided by the bus driver. The variable speed arrangement of closing and opening the door is required. Draw the pneumatic cirucit. **[12]**

OR

Q12)In a typical hydraulic circuit, two identical cylinders C and D are to be moved simultaneously. Both cylinders have a stroke of 1.2m and it is to be completed in 30 seconds. The cylinder a moves against a load of 30 KN while the cylinder B has a load of 25 KN.

After complete retraction of cylinder A, the return stroke of the cylinder B should start. The return speeds are expected to be as fast as possible.

Draw the circuit which will fulfill these requirements. Select different components from the data given in data sheet. In case the component is not available in the data given, mention its range. **[18]**

(a) Suction strainer:

Model	Flow Capacity (lpm)
S_1	38
S_2	76
S_3	152

(b) Pressure gauge:

Model	Range (bar)
PG_1	0 – 25
PG_2	0 – 40
PG_3	0 – 100
PG_4	0 – 160

(c) Vane pump:

Model	Delivery in lpm		
	At 0 bar	At 35 bar	At 70 bar
P_1	8.5	7.1	5.3
P_2	12.9	11.4	9.5
P_3	17.6	16.1	14.3
P_4	25.1	23.8	22.4
P_5	39.0	37.5	35.6

(d) Relief valve:

Model	Flow capacity (lpm)	Max. working pressure & bar
R_1	11.4	70
R_2	19.0	210
R_3	30.4	70
R_4	57.0	105

(e) Flow control valve:

Model	Working pressure (bar)	Flow range (lpm)
F_1	70	0 - 4.1
F_2	105	0 - 4.9
F_3	105	0 - 16.3
F_4	70	0 - 24.6

(f) Directional control valve:

Model	Max. working pressure & bar	Flow capacity (lpm)
D_1	350	19
D_2	210	38
D_3	210	76

(g) Check valve:

Model	Max. working Pressure & bar	Flow capacity (/pm)
C_1	210	15.2
C_2	210	30.4
C_3	210	76

(h) Pilot operated check valve:

Model	Max. working Pressure (bar)	Flow capacity (lpm)
PO_1	210	19
PO_2	210	38
PO_3	210	76

(i) Cylinder (Max. working pressure 210 bar)

Model	Bore diameter (mm)	Rod diameter (mm)
A_1	25	12.5
A_2	40	16
A_3	50	35
A_4	75	45
A_5	100	50

(j) Oil reservoirs:

Model	Capacity (litres)
T_1	40
T_2	100
T_3	250
T_4	400
T_5	600