

Total No. of Questions : 10]

SEAT No. :

P3583

[Total No. of Pages : 3

[4959]-1053

B.E. (Mechanical) (S/W) (End Semester)

INDUSTRIAL HYDRAULICS & PNEUMATICS

(2012 Pattern)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.
- 2) Figures to the right indicate full marks.
- 3) Draw neat sketches wherever necessary.
- 4) Use of electronic pocket calculator is allowed.
- 5) Assume suitable data, if necessary.

Q1) a) Write a short note on “classification of pumps”. [5]

b) Classify Hydraulic Motors. [5]

OR

Q2) a) Write a short note on “Pressure switches” [4]

b) Explain with neat sketch “spring loaded Accumulator”. [6]

Q3) a) Write a short note on “Energy losses in hydraulic systems”. [4]

b) Explain with neat sketch working of “External Gear Pump”. [6]

OR

Q4) a) Explain with neat sketch working of “Radial Piston Motor”. [6]

b) Write a short note on “Cushioning of cylinders”. [4]

Q5) a) Explain with neat sketch “Sequencing circuit”. [8]

b) Explain with neat sketch “synchronization circuit”. [8]

OR

Q6) a) Explain with neat sketch “Fail safe circuit”. [8]

b) Explain with neat sketch “Motor Breaking circuit”. [8]

P.T.O.

- Q7)** a) Write a short note on “selection of compressors for pneumatic systems”. [6]
b) Write a short note on “Filters & Lubricators used in pneumatic systems”. [10]

OR

- Q8)** a) Write a short note on Direction control valves used in “Pneumatic systems”. [10]
b) Write a short note on “Vacuum pumps & its types”. [6]
- Q9)** a) Write a short note on “Design parameters for Hydraulic system”. [9]
b) Write a short note on “Trouble shooting maintenance procedures for “pumps & pressure Relief valves”. [9]

OR

- Q10)** Two identical cylinders A and B are to be operated simultaneously. The cylinder “A” moves against a load of 25 KN, while the cylinder “B” has a load of 20 KN. Both the cylinders have a stroke of 01 m. The working stroke is to be completed in about 20 seconds time. The return stroke of cylinder ‘B’ is to start only after the cylinder ‘A’ is completely retreated. The return speeds are to be as fast as possible. Draw a circuit which will fulfill these requirement. Select different components you used in the circuit from the data given. Mention the ratings of the components in case it is not available in the given data. [18]

DATA

1. SUCTION STRAINER:

Model	Flow capacity
	(lpm)
S1	38
S2	76
S3	152

2. PRESSURE GAUGE:

Model	Range (bar)
PG1	0-25
PG2	0-40
PG3	0-100
PG4	0-160

3. VANE PUMP:

Model	Delivery (lpm)			Model	Max. working pressure (bar)	Flow capacity (lpm)
	at 0 bar	at 35 bar	at 70 bar			
P1	8.5	7.1	5.3	PO1	210	19
P2	12.9	11.4	9.5	PO2	210	38
P3	17.6	16.1	14.3	PO3	210	76
P4	25.1	23.8	22.4			
P5	39	37.5	35.6			

4. RELIEF VALVE:

Model	Flow range (lpm)	Max. working pressure (bar)	Model	Bore Dia. (mm)	Rod Dia. (mm)
			R1	11.4	70
R2	19	210	A2	40	16
R3	30.4	70	A3	50	35
R4	57	105	A4	75	45
			A5	100	50

5. FLOW CONTROL VALVE:

Model	Max. working pressure (bar)	Flow range (lpm)	Model	Capacity (lit)
			F1	70
F2	105	0-4.9	T2	100
F3	105	0-16.3	T3	250
F4	70	0-24.6	T4	400
			T5	600

6. DIRECTION CONTROL VALVE:

Model	Max. working pressure (bar)	Flow capacity (lpm)
D2	210	38
D3	210	76

7. CHECK VALVE

Model	Max. working pressure (bar)	Flow capacity (lpm)
C2	210	30.4
C3	210	76

8. SEQUENCE VALVE

9. CYLINDER (Max. working pressure -210)

Model	Bore Dia. (mm)	Rod Dia. (mm)
A1	25	12.5
A2	40	16
A3	50	35
A4	75	45
A5	100	50

10. OIL RESERVOIR:

