CBCS SCHEME

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18ME55

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023
Fluid Power Engineering

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. With a block diagram, explain hydraulic system. **(07 Marks)**

b. Give the differences between hydraulic system and pneumatic system. **(07 Marks)**

c. Explain Pascal's law. **(06 Marks)**

OR

2 a. With the help of sketch explain filter position in a hydraulic system. **(07 Marks)**

b. With a neat sketch, explain water cooled heat exchanger. **(07 Marks)**

c. Write a note on Seals. **(06 Marks)**

Module-2

3 a. With a neat sketch, explain internal gear pump. **(07 Marks)**

b. A pump having a displacement volume of $90cm^3$ delivers $0.082m^3/min$ at 1000rpm and 6.9MPa. If the input torque is 102Nm. Find

i) Overall efficiency of the pump

ii) Theoretical torque required to operate the pump **(07 Marks)**

c. With a neat sketch, explain diaphragm type gas loaded accumulator. **(06 Marks)**

OR

4 a. With a neat sketch, explain hydraulic cylinder cushioning. **(07 Marks)**

b. A hydraulic motor has a $100cm^3$ volumetric displacement. If it has a pressure rating of 140 bars receives oil from a $0.001m^3/s$ theoretical flow rate pump, find motor

i) Speed

ii) Theoretical torque

iii) Theoretical power **(08 Marks)**

c. With a neat sketch, explain rotary actuator. **(05 Marks)**

Module-3

5 a. With a sketch, explain 3 position 4 way direction control valve. **(08 Marks)**

b. Explain working of unloading valve **(07 Marks)**

c. Explain working of shuttle valve. **(05 Marks)**

OR

6 a. With the help of circuit diagram, explain sequencing of cylinder. **(08 Marks)**

b. Explain metering in and metering out circuits. **(12 Marks)**

Module-4

7 a. List the advantages, disadvantages and applications of Pneumatic system. (08 Marks)
b. With a neat sketch, explain F.R.L unit in a pneumatic system. (12 Marks)

OR

8 a. With a neat labelled sketch explain parts of pneumatic double acting cylinder. (07 Marks)
b. With a neat sketch, explain quick exhaust valve. (07 Marks)
c. Explain working of reciprocating air compressor. (06 Marks)

Module-5

9 a. With circuit diagram, explain indirect control of single acting cylinders. (08 Marks)
b. Explain 'OR' and 'AND' logic gates. (08 Marks)
c. Write a note on pneumatic throttle valve. (04 Marks)

OR

10 a. Explain with circuit coordinated cylinder movements. (10 Marks)
b. With a neat sketch, explain solenoid controlled direction control valve. Mention advantages. (10 Marks)

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