

USN

--	--	--	--	--	--	--	--	--	--

17AU554

Fifth Semester B.E. Degree Examination, Feb./Mar.2022 Hydraulics & Pneumatics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain with a neat diagram of unbalanced Vane pump. (06 Marks)
b. Explain Pascal's law with a neat sketch. (06 Marks)
c. In the hydraulic press shown in Fig. Q1 (c), a force of 100 N is exerted on the small piston. Determine the upward force on the large piston. The area of the small piston is $50 \times 10^2 \text{ mm}^2$. Also find the distance moved by the large piston, if the small piston moves by 100 mm. (08 Marks)

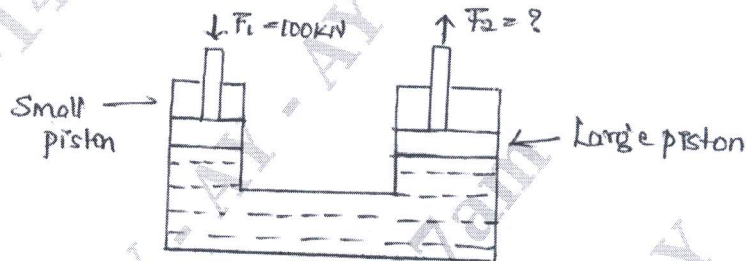


Fig. Q1 (c)

OR

- 2 a. List the different types of Hydraulic Semi-rotary actuators? Explain with a neat sketch, the piston-type rotary actuator. (10 Marks)
b. What are the different types of Linear Hydraulic actuators (cylinders). Explain with neat diagram, for any two types. (10 Marks)

Module-2

- 3 a. With a graphical symbol. Explain any four directional control valve depending on actuation. (10 Marks)
b. Explain with a simple diagram the principle of working of a pilot operated pressure relief valve. (10 Marks)

OR

- 4 a. What is the function of filters? Explain with neat sketch, different types of filters. (10 Marks)
b. What are the desirable properties of hydraulic fluids? Explain briefly. (10 Marks)

Module-3

- 5 a. Describe the working principle of Regenerative circuit. (10 Marks)
b. With a neat sketch, explain how do you control a single acting and double acting hydraulic cylinder. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Explain with a simple sketch, the construction of a diaphragm and Bladder type accumulator. (10 Marks)
- b. Describe with a neat circuit diagram, the working of a locking cylinder curing pilot operated check valve. (10 Marks)

Module-4

- 7 a. With the help of a neat block diagram, explain structure of pneumatic power system. (10 Marks)
- b. Explain with a neat sketch, end position cushioning and Rodless cylinder. (10 Marks)

OR

- 8 a. Discuss the construction and working of a 4/2 poppet valve. (10 Marks)
- b. Explain different types of seals in air cylinder, with neat sketch, (10 Marks)

Module-5

- 9 a. Define motion control diagrams. Explain with a neat sketch, two-cylinder pneumatic circuit and its motion-control diagram. (10 Marks)
- b. Explain with a neat sketch the hydraulic circuit with sequential motion control diagram. (10 Marks)

OR

- 10 a. How are compressor's classified? Explain with a neat sketch the working of a single acting two stage compressor. (10 Marks)
- b. Explain with neat block diagram, types of piping layout. (10 Marks)
