A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99703

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Elective

Mechanical Engineering

19UME903– APPLIED HYDRAULICS AND PNEUMATICS

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Property of a fluid by which its own molecules are attracted is called CO1- U

   (a) Adhesion (b) Cohesion (c)Viscosity (d) Compressibility

2. In flow, the liquid particles may possess CO1- U

   (a) potential energy (b) kinetic energy (c) pressure energy (d) all the above

3. Tandem cylinders can be used in CO1- U

   (a) Synchronizing circuits. (b) Mid stroke stop circuits

   (c) two speed circuits (d) all of the above

4. Which of the following pumps is used for pumping viscous fluids..... CO1- U

   (a) Centrifugal pump (b) Screw pump

   (c) Reciprocating pump (d) Jet pump

5. Shuttle valves allow flow in. CO1- U

   (a) one direction only (b) both directions

   (c) either direction after reaching set pressure (d) none of these

6. Check valve is a type of CO1- U

   (a) pressure reducing valve (b) pressure relief valve

   (c) directional control valve (d) none of the above

7. P V = Constant CO1- U

   (a) Boyle's law (b) Charle's law (c) Gay-Lussac's law (d) General gas law

8. The Lubricator in a line pneumatic circuit is the CO1- U

(a) First element in line (b) Second element in line

(c) Last element in line (d) Third element in line

9. In an automatic control system which of the following elements is not used? CO1- U

(a) Error detector (b) Final control element (c) Sensor (d) Oscillator

10 A servo valve circuit _____ has a feedback signal to the electronic controller CO1- U

(a) sometime (b) never (c) always (d) alternatively

PART – B (5 x 2= 10 Marks)

11 Explain the Laminar and Turbulent Flow. CO1- U

12 Explain the Pumping theory CO1- U

13 List out the types of valve actuation methods. CO1- U

14 Explain the function of air filter and dryer CO1- U

15 Differentiate pressure switch and temperature switch CO1- U

PART – C (5 x 16= 80 Marks)

16 (a) Discuss the properties of the Hydraulic fluids. CO1-U (16)

Or

(b) What is Fluid power system? Explain the working principle of Pneumatic Power System CO1-U (16)

17 (a) Explain the construction and working principle of Swash plate type piston pump with neat sketch. CO1-U (16)

Or

(b) Explain the construction and working principles of Gear motors with neat sketch. And also mention merits and demerits CO1-U (16)

18 (a) Explain any two application circuits employing accumulator for different purposes with neat sketch. CO1-U (16)

Or

(b) Explain the construction and working principle of Intensifier circuit with neat sketch. CO1-U (16)

19.	(a)	Explain the construction and working principle of a FRL Unit with neat sketch	CO1-U	(16)
		Or		
	(b)	Three pneumatic cylinders A, B, and C are used in an automatic sequence of operation. A cylinder extend, B cylinder extends, B cylinder retracts and then A cylinder retracts, C cylinder extends, C cylinder retracts. Develop pneumatic circuits by cascade method.	CO6-C	(16)
20.	(a)	Explain the construction and operation of proportional pressure relief valve.	CO1-U	(16)
		Or		
	(b)	List out any five types of faults that can be found in compressors. Also write the remedial actions for the faults.	CO1-U	(16)