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Enrollment No.....



Faculty of Engineering
End Sem (Odd) Examination Dec-2022
RA3CO18 Hydraulics & Pneumatics

Programme: B.Tech.

Branch/Specialisation: RA

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. Which energy is used to transmit power in the hydrostatic system? **1**
(a) Pressure energy (b) Kinetic energy
(c) Potential energy (d) All of these
- ii. The underlying principle behind a hydraulic press is based on _____ principle. **1**
(a) Bramah's (b) Pascal's (c) Stoke's (d) Newton's
- iii. What is the function of the pressure control valve? **1**
(a) To control the force generated by actuators
(b) To perform two operations in sequence
(c) To control the direction of flow
(d) To avoid the development of excess of pressure
- iv. Check valve is a type of _____. **1**
(a) Pressure reducing valve (b) Pressure relief valve
(c) Directional control valve (d) None of these
- v. Why is/are bleed off circuits used? **1**
(a) Bleed off circuits are used to reduce the speed of the actuator
(b) Bleed off circuit is used to restrict the flow of fluid into the hydraulic cylinder
(c) Bleed-off circuit is used to restrict the flow of fluid out of the hydraulic cylinder
(d) None of these

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- vi. Hydraulic accumulator is a device used for _____. **1**
 (a) Lifting heavy weight
 (b) Storing the energy of liquid in the form of pressure energy
 (c) Increasing the pressure intensity of a liquid
 (d) None of these
- vii. Which part of the Pneumatic system stores the compressed air? **1**
 (a) Air dryer (b) Air compressor
 (c) Air receiver tank (d) Air lubricator
- viii. In which type of system does power transmission takes place through compressed air? **1**
 (a) Fluid power system (b) Hydraulic system
 (c) Pneumatic system (d) Stepper motors
- ix. Which is an electro-pneumatic device? **1**
 (a) Seven Segment display (b) BO Motor
 (c) Hydraulic cylinder (d) Lithium battery
- x. In pneumatic systems the medium used is **1**
 (a) Air (b) Liquid (c) Hydrogen (d) Oil
- Q.2 Attempt any two:
 i. Explain the working of gear type motor and vane type motor. **5**
 ii. State and explain Pascal's law. **5**
 iii. Explain lobe pump with a neat sketch. **5**
- Q.3 i. Name the different valves used in hydraulic system. **2**
 ii. Sketch and explain flow control valve. **8**
- OR iii. Sketch and explain commonly used 3-position 4-way direction control valves. **8**
- Q.4 i. Explain the working of a regenerative circuit. **3**
 ii. Draw and explain with a circuit how to obtain sequencing of two double acting cylinders. **7**
- OR iii. Draw and explain with a circuit how unloading valve and two pumps used in punching press. **7**
- Q.5 i. Explain any four components of pneumatic system. **4**

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- ii. With a neat sketch of the pneumatic filter and explain its construction and working. **6**
- OR iii. Explain reciprocating compressor with neat sketch. **6**
- Q.6 Attempt any two:
 i. What is the purpose of quick exhaust valve? **5**
 ii. Explain the commonly used electrical control device in fluid power system. **5**
 iii. What is a ladder diagram? **5**

Marking Scheme
RA3CO18 Hydraulics & Pneumatics

Q.1	i)	Which energy is used to transmit power in the hydrostatic system?	1
	a)	Pressure energy	
	ii)	The underlying principle behind a hydraulic press is based on _____ principle.	1
	b)	Pascal's	
	iii)	What is the function of the pressure control valve?	1
	a)	To control the force generated by actuators	
	iv)	Check valve is a type of ____.	1
	(c)	Directional control valve	
	v)	Why is/are bleed off circuits used?	1
	a)	Bleed off circuits are used to reduce the speed of the actuator	
	vi)	Hydraulic accumulator is a device used for _____.	1
	(b)	Storing the energy of liquid in the form of pressure energy	
	vii)	Which part of the Pneumatic system stores the compressed air?	1
	c)	Air receiver tank	
	viii)	In which type of system does power transmission takes place through compressed air?	1
	c)	Pneumatic system	
	ix)	Which is an electro-pneumatic device?	1
	c)	Hydraulic cylinder	
	x)	In pneumatic systems the medium used is	1
	a)	Air	
Q.2		Attempt any two:	
	i.	gear type motor 2.5 marks	5
		Vane type motor 2.5 marks	
	ii.	State Pascal's law 2 marks	5
		explain Pascal's law 3 marks	
	iii.	lobe pump 3 marks	5
		neat sketch 2 marks	
Q.3	i.	1 marks for each valves	2
	ii.	explain flow control valve 6 marks	8
OR		Sketch 2 marks	
	iii.	explain commonly used 3-position 4-way direction control valves 6 marks	8
		Sketch 2 marks	

Q.4	i.	Explanation of a regenerative circuit. 3 marks	3
	ii.	Explanation 5 marks	7
OR		Diagram 2 marks	
	iii.	Explanation 5 marks	7
		Diagram 2 marks	
Q.5	i.	1 marks for each components	4
	ii.	sketch of the pneumatic filter 2 marks	6
OR		explain its construction and working 4 marks	
	iii.	Explain reciprocating compressor 4 marks	6
		Sketch 2 marks	
Q.6		Attempt any two:	
	i.	Explanation of quick exhaust valve 3 marks	5
		purpose of quick exhaust valve 2 marks	
	ii.	Explanation 5 marks	5
	iii.	Explanation 5 marks	5
