

<b>Ch. 1 Introduction</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	Explain open loop closed circuits and closed loop closed circuits for hydrostatic systems.	7		
2.	Basic Components of a Hydraulic System	7		
3.	Explain Brahma’s press principle with the help of neat sketch.		3	
4.	Compare advantages and disadvantages of pneumatic and hydraulic system?		7	
5.	Draw the general layout of hydraulic system. Explain the function of each component.			3
6.	Distinguish between Hydraulic system & Pneumatic system.			3
7.	List the electric devices used in the control of fluid power system.			3
8.	Write a note on thermocouple type temperature sensor			4
9.	Give ISO/ANSI symbol of following. 1. Unidirectional fixed displacement hydraulic pump 2. Single acting cylinder with spring return 3. 4/3 DCV 4. FRL unit 5. Variable restriction flow control valve 6. Spring loaded accumulator 7. Air filter			7

<b>Ch. 2 System Components, Hydraulic Oils, Fluid Properties and Filter</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	What is a by-pass filter? State its advantages and disadvantages.	7		
2.	Advantages and disadvantages of High - Water Content Fluid (HWCF).	7		
3.	Name and explain the properties of hydraulic oil used in hydraulic circuit.		7	
4.	Draw Symbol of filter & explain the working of by-pass type filter			7

<b>Ch. 3 Hydraulic Pumps, Motors and Actuators</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	Construction and working of an internal gear pump.	7	7	
2.	Explain control of a bi-directional motor by 4/2 way valve.	7		
3.	Differentiate between a hydrostatic and hydrodynamic system.	7		7
4.	Classify hydraulic pumps. Explain the principle of working of a positive displacement pump.		7	
5.	Explain the working of balanced vane pump with the help of neat sketch.		7	
6.	Show the construction of double acting cylinder with labelled diagram.		7	
7.	Give the classification of Pumps. Sketch & Explain working of internal gear pump.			7
8.	Sketch & Explain the working of Ge- rotor pump.			4
9.	What is an actuator? Give the classification of hydraulic actuators.			3

<b>Ch. 4 Hydraulic Valves and Hydraulic System Accessories</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	Cite the classification of check valves and explain the function of pilot-operated check valve, giving the necessary drawing.	7		
2.	State the different ways of control of DCVs.	7		
3.	Draw the symbols of Pressure control valves used in hydraulic systems.	7		4
4.	Draw the symbols for following hydraulic components according to ISO: (A) Double acting cylinder with cushioning on both sides (B) Lever operated, spring returned, 3/2 DCV (C) Pilot operated check valve (D) Sequence valve.		4	
5.	List different types of accumulators and describe functioning of any two with the help of neat sketch.		7	
6.	Explain the working of “Pilot operated, spring centered 4-port, 3-position direction control (spool) valve” with the help of neat sketch.		7	
7.	List different pressure control valves giving its application. Explain construction and working of any one in detail with the help of neat sketch.		7	
8.	What do you mean by pressure relief valve? sketch & explain with neat sketch the working of pilot operated pressure relief valve (Compound Relief valve)			7
9.	List the Power loss in flow control circuits & explain in detail.			4
10.	Explain 4/3 sliding spool direction control valve working.			3
11.	Describe Working of sequence valve with neat sketch & draw its symbol			7

<b>Ch. 5 Design of Hydraulic Circuits</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	A single acting cylinder is to be operated from two different sources A and B such that its forward motion can be actuated from either of the two locations. Draw and explain a circuit diagram.	7		
2.	Explain the control of a surface grinder table by pilot-operated valve with detail drawing.	7		
3.	Differentiate between direct and indirect control. Draw simple hydraulic circuit diagrams of both and explain the differences.	7		
4.	Draw a hydraulic circuit diagram of a hydraulic system having a double acting cylinder which has a rapid approach speed, than slow feed motion and at the end of the stroke the cylinder returns rapidly.	7		
5.	Draw and explain the working of 'Sequential circuit' for sequential operation of two - double acting cylinders, using two sequence valves.		7	
6.	Draw and explain the working of 'Regenerative circuit' for achieving same speed of double acting cylinder in both strokes.		7	
7.	Draw speed controlled actuator, Meter- out circuits for DAC for extension.			3
8.	Draw the hydraulic circuit for Drilling machine & explain its working.			7
9.	Bleed off Circuits – sketch & explain its working.			7

<b>Ch. 6 Introduction to Pneumatic Systems</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	Construction and working of time delay valve of pneumatic systems.	7		
2.	List the six basic components used in a pneumatic system.	7		4
3.	Compare advantages and disadvantages of pneumatic and hydraulic system?		7	
4.	Explain construction & working of pressure regulator used in pneumatic system.		7	
5.	With the help of neat sketch, explain the principle and working of Shuttle valve (OR gate) and Twin Pressure valve (AND gate).		7	3
6.	Give ISO/ANSI symbol of following. 1. Unidirectional fixed displacement hydraulic pump 2. Single acting cylinder with spring return 3. 4/3 DCV 4. FRL unit 5. Variable restriction flow control valve 6. Spring loaded accumulator 7. Air filter			7
7.	If diameter of piston is 60 mm, diameter of piston rod is 10 mm, & air pressure is 100 N/mm <sup>2</sup> , what will be the force in advance stroke & return stroke.			4

<b>Ch. 7 Pneumatic Circuits</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	Design a circuit to control speed of a double acting pneumatic cylinder in both the strokes and explain its working.		7	
2.	What is functional diagram in pneumatic circuit? Explain Movement diagram, Travel-Time diagram and Position-step diagram with the help of an example.		7	
3.	Sketch & explain Pneumatic Circuit using Quick Exhaust valve.			7
4.	Draw Pneumatic circuit for operating DAC by 4/3 DCV.			7
5.	Draw Throttle-out circuits for extension stroke for pneumatic system.			7

<b>Ch. 8 Introduction to Automation</b>				
<b>Sr. No.</b>	<b>Questions</b>	<b>Nov – 16</b>	<b>May – 17</b>	<b>Nov – 17</b>
1.	What do you mean Automation? Give classification of Automation.			4

