Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

USN ☐☐☐☐☐☐☐☐☐☐

Fifth Semester B.E. Degree Examination
Hydraulics and Pneumatics

TIME: 03 Hours   **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module – 1	
Q.1	**(a)**	Define hydraulic system. Explain Pascal's law with example. State applications.	10
	(b)	Explain variable displacement axial piston pump (swash plate).	10
		OR	
Q.2	**(a)**	Explain construction and working of vane type motor.	08
	(b)	With neat sketch derive a expression for first class lever system with hydraulic cylinder to drive a load	07
	(c)	A vane pump has a volume displacement of 82 cm3. The diameter of the rotor is 50mm and that of the cam ring is 75 mm. if the width of the vane or rotor is 40mm find the maximum eccentricity.	05
		Module – 2	
Q.3	**(a)**	Explain with a neat sketch construction and working pilot operated Direction control valve.	10
	(b)	Explain construction and working of Direct acting pressure relief valve.	07
	(c)	Write graphical symbol for 5/3 valve, 4 ways &centre off position.	03
		OR	
Q.4	**(a)**	Explain with a neat sketch constructional features of a hydraulic reservoir. State the functions of Reservoir.	10
	(b)	Explain desirable properties of hydraulic fluid	06
	(c)	State the causes and remedies for low pressure	04
		Module – 3	
Q.5	**(a)**	With neat sketch explain Sequence valve circuit.	10
	(b)	Draw the graphical symbol for the following devices 1) Filter 2) Pressure relief valve 3) Pump 4) check valve	04
	(c)	Explain construction and working of double acting cylinder	06
		OR	
Q.6	**(a)**	Explain Accumulator as Emergency power source	10
	(b)	Explain speed control of hydraulic cylinder using meter out circuit.	10
		Module – 4	
Q.7	**(a)**	Explain the characteristics of compressed air	10
	(b)	With neat sketch explain decelerating device (cushioning) of cylinder	10
		OR	
Q.8	**(a)**	With neat Sketch explain Quick Exhaust valve	10
	(b)	With neat Sketch explain 3/2 poppet valve	10

		Module – 5	
Q.9	**(a)**	Explain Cascade method of pneumatic circuit design.	12
	(b)	With suitable line diagram explain Motion and control diagram	08
		OR	
Q.10	**(a)**	With a circuit diagram explain pilot assisted solenoid control of DC valves	08
	(b)	Explain the following with neat sketch a) Limit switches 2) Relay	12

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
Question		**Bloom's Taxonomy Level attached**	**Course Outcome**	**Programme Outcome**
Q.1	(a)	L1	CO1	1,2,3
	(b)	L2	CO1	1,2,3
	(c)			
Q.2	(a)	L2	CO1	1,2,3
	(b)	L2	CO1	1,2,3
	(c)	L1	CO1	1,2,3
Q.3	(a)	L2	CO2	1,2,3
	(b)	L2	CO2	1,2,3
	(c)	L1	CO2	1,2,3
Q.4	(a)	L2	CO2	1,2,3
	(b)	L2	CO2	1,2,3
	(c)	L1	CO2	1,2,3
Q.5	(a)	L3	CO3	1,2,3
	(b)	L2	CO3	1,2,3
	(c)	L2	CO3	1,2,3
Q.6	(a)	L3	CO3	1,2,3
	(b)	L2	CO3	1,2,3
	(c)			
Q.7	(a)	L1	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			
Q.8	(a)	L2	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			
Q.9	(a)	L2	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			
Q.10	(a)	L3	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			

	Lower order thinking skills		
Bloom's Taxonomy Levels	Remembering(knowledge):L_1	Understanding Comprehension): L_2	Applying (Application): L_3
	Higher order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6

Model Question Paper-2 with effect from 2019-20 (CBCS Scheme)

USN

Fifth Semester B.E. Degree Examination
Hydraulics and Pneumatics

TIME: 03 Hours   **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module – 1	
Q.1	(a)	Define hydraulic system. Explain the structure of Hydraulic control system with sketch. State applications.	10
	(b)	With neat sketchexplain Radial piston pump.	10
		OR	
Q.2	(a)	Explain construction and working of External gear type motor.	08
	(b)	With neat sketch derive a expression for first class lever system with hydraulic cylinder to drive a load	07
	(c)	A vane pump has a volume displacement of 96 cm^3. The diameter of the rotor is 60mm and that of the cam ring is 85 mm. if the width of the vane or rotor is 40mm find the maximum eccentricity.	05
		Module – 2	
Q.3	(a)	Explain with a neat sketch construction and working of pressure sequence valve.	10
	(b)	Explain construction and working of pressure compensated flow control valve (Restrictor type).	07
	(c)	Write graphical symbol for 5/3 valve, 4 ways &centre off position.	03
		OR	
Q.4	(a)	Explain with a neat sketch constructional features of a hydraulic reservoir. State the functions of Reservoir.	10
	(b)	Explain Full flow and by pass filter	06
	(c)	State the causes and remedies for No Flow	04
		Module – 3	
Q.5	(a)	With neat sketch explain counter balance valve circuit.	10
	(b)	Draw the graphical symbol for the following devices 1) Filter 2) Pressure relief valve 3) Pump 4) check valve	04
	(c)	Explain construction and working of single acting cylinder	06
		OR	
Q.6	(a)	Explain the following a) Dead weight Accumulator b) Piston type Accumulator	10
	(b)	Explain speed control of hydraulic cylinder using meter in circuit.	10
		Module – 4	
Q.7	(a)	State advantages, limitations and applications of Pneumatic system	10
	(b)	With neat sketch explain filters and lubricators used in pneumatic system	10
		OR	
Q.8	(a)	With neat Sketch explain Quick Exhaust valve	10
	(b)	With neat Sketch explain 3/2 poppet valve	10

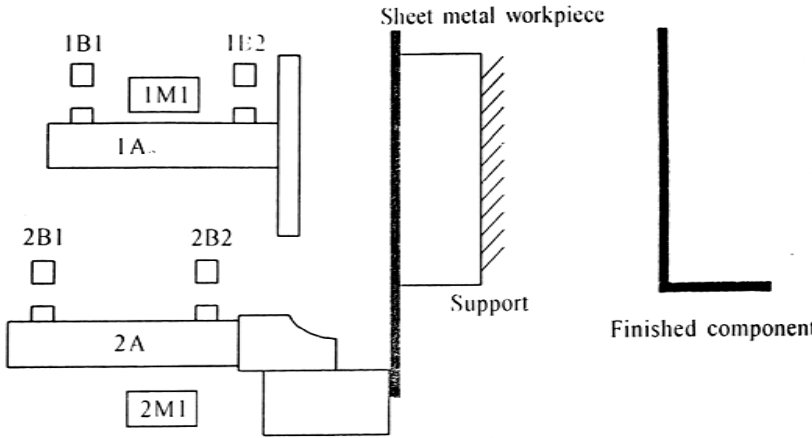|		Module – 5	
Q.9	**(a)**	Explain Cascade method of pneumatic circuit design.	12
	(b)	Write the Function (Displacement, step & time) diagram for a sheet metal bending applications.	08
		OR	
Q.10	**(a)**	With a circuit diagram explain pilot assisted solenoid control of DC valves	08
	(b)	Explain the following with neat sketch a) Limit switches 2) Relay	12

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
Question		**Bloom's Taxonomy Level attached**	**Course Outcome**	**Programme Outcome**
Q.1	(a)	L1	CO1	1,2,3
	(b)	L2	CO1	1,2,3
	(c)			
Q.2	(a)	L2	CO1	1,2,3
	(b)	L2	CO1	1,2,3
	(c)	L1	CO1	1,2,3
Q.3	(a)	L2	CO2	1,2,3
	(b)	L2	CO2	1,2,3
	(c)	L1	CO2	1,2,3
Q.4	(a)	L2	CO2	1,2,3
	(b)	L2	CO2	1,2,3
	(c)	L1	CO2	1,2,3
Q.5	(a)	L3	CO3	1,2,3
	(b)	L2	CO3	1,2,3
	(c)	L2	CO3	1,2,3
Q.6	(a)	L3	CO3	1,2,3
	(b)	L2	CO3	1,2,3
	(c)			
Q.7	(a)	L1	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			
Q.8	(a)	L2	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			
Q.9	(a)	L2	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			
Q.10	(a)	L3	CO4	1,2,3
	(b)	L2	CO4	1,2,3
	(c)			

Bloom's Taxonomy Levels	**Lower order thinking skills**		
	Remembering(knowledge):L_1	Understanding Comprehension): L_2	Applying (Application): L_3
	Higher order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6