

Reg.No. \_\_\_\_\_

**Karunya UNIVERSITY**(Karunya Institute of Technology & Sciences)  
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)**End Semester Examination – Nov/Dec – 2016**

**Code : 15ME3006**  
**Sub. Name : Design of Fluid Power Systems**

**Semester : 2016-17 ODD**  
**Duration : 3hrs**  
**Max. marks : 100**

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	What are the various advantages, disadvantages and applications of fluid power systems	i	14
	b.	Describe the working of external Gear pump with neat diagram.	ii	6
<b>(OR)</b>				
2.	a.	How Radial piston pump works, and give few applications of it.	ii	6
	b.	Discuss the components of Hydraulic and Pneumatic systems	i	14
3.	a.	Draw and name different types of flow control valves and check valves.	i	12
	b.	With the help of cross sectional diagram of Bypass-type Flow Control Valve, explain its working in detail.	i	8
<b>(OR)</b>				
4.	a.	Classify hydraulic pumps in detail.	ii	4
	b.	Draw the symbols for Heater, Cooler, Separator, Filter, Strainer and Lubricator.	i	6
	c.	A pump has a displacement volume of 100 cm <sup>3</sup> . It delivers 0.0015 m <sup>3</sup> /s at 1000 rpm and 70 bars. The prime mover input torque is 120 Nm. What is the overall efficiency of the pump? What is the theoretical torque required to operate the pump?	ii	10
5.	a.	Describe about the Moving Part Logic elements.	ii	10
	b.	Design a pneumatic AND logic circuit which uses 3/2 way single solenoid valve spring return circuit and 5/2 way double solenoid valve circuit.	iii	10
<b>(OR)</b>				
6.	a.	Design an electro pneumatic circuit for Process Industry Application and list the components.	iii	10
	b.	Draw the hydraulic press circuit.	iii	10

7.	a.	Draw the block diagram of the architecture of PLC.	ii	8
	b.	List the advantages of PLC over personal computer	ii	6
	c.	Draw the Ladder Logic diagram for basic logic gates	ii	6
<b>(OR)</b>				
8.	a.	Discuss in detail the working of an accumulator and draw three types of accumulator circuits.	ii	20
		<b><u>Compulsory:</u></b>		
9.	a.	Design an industrial hydro pneumatic circuit for a hydraulic system which operates at an elevated pressure (200 bar) to perform the direct labor on the machine and a pneumatic system actuates the control function with a pressure less than 10 bar. Explain the working of the circuit.	iii	15
	b.	List various types of bulk fluids with their properties.	i	5

ALL THE BEST

\*\*\*\*\*