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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination – June – 2017**

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| **Code :** | **14ME2007** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FLUID POWER CONTROL ENGINEERING** | **Max. marks :** | **100** |

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

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1 | a | List the applications of fluid power. | CO1 | 4 |
| b | Identify the basic components of hydraulic power system with a circuit and discuss the fluid reservior with neat diagram. | CO1 | 12 |
| c | Outline the advantages of pneumatic power systems and hydraulic systems over electrical systems. | CO1 | 4 |
| (OR) | | | | |
| 2. | a. | Sketch and discuss the working principle for the following hydraulic motors : (i) External gear motor (ii) Vane motor. | CO2 | 12 |
|  | b. | A hydraulic motor operates displacement of 150cm3 operates with a pressure of 120 bar and a speed of 2500rpm. The actual flow rate consumed by the motor is 0.00781 m3/s and the actual torque delivered by the motor is 250Nm. Find   1. Volumetric efficiency. 2. Mechanical efficiency. 3. Overall efficiency. 4. Power delieverd by the motor. | CO2 | 8 |
| 3. | a. | Draw various directional control valve spool switching mechanisms. | CO3 | 4 |
| b. | For the Third Class lever system, find the cylinder the force required to lift a load of 9000 N. Assume the distance of fulcrum from the cylinder is 1/3rd of total length of rod. | CO3 | 6 |
| c. | Apprise the function of intensifier and discuss with a hydraulic circuit. | CO3 | 10 |
| (OR) | | | | |
| 4. | a. | Describe various types of pressure accumulators with neat sketches. | CO3 | 10 |
| b | Draw two types of accumulator circuits and discuss the working. | CO3 | 10 |
| 5. |  | Build the Synchronizing hydraulic circuits with   1. Series Piping 2. Tie rod cyclinders 3. Matching Pumps 4. Flow Control Valves 5. Flow dividing Motors. | CO4 | 20 |
| (OR) | | | | |
| 6. | a. | Illustrate the working of solenoid with neat diagram. | CO2 | 10 |
|  | b. | Analysethe working of relay with a practical example. | CO2 | 10 |

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| 7. | a. | Design and develop a pneumatic circuit for the sequence of A+B+A-B-. | CO4 | 12 |
|  | b. | Design and develop aelectro pneumatic circuit using limit switch for double acting cylinder. | CO3 | 8 |
| (OR) | | | | |
| 8. | a. | With a neat sketch, explain the hydraulic circuit for quick return motion of shaping machine. | CO4 | 10 |
|  | b. | Draw the pneumatic logic circuits. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Summerise the working of the following fluidic sensors with neat sketches.   1. Coanda Effect 2. OR/NOR and AND/NAND monostable devices 3. Cone-Jet Sensor 4. Interruptible Jet Sensor 5. Reflex Proximity Switch | CO4 | 20 |