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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019
Course Code: MR202
Course Name: SENSORS AND ACTUATORS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions. Each question carries 5 marks

1	Draw and explain combination pumps	5
2	Explain stages of air treatment with neat block diagram	5
3	Draw the symbol of	5

      (i)   Pressure regulator

      (ii)   4/2 valve

      (iii)   Check valve

      (iv)   Shuttle valve

      (v)   Lubricator

4	Draw the constructional diagram of a typical cylinder and mark the parts.	5
5	Explain fail up actuators	5
6	Write a note on signals and standards	5
7	Describe about different types of fluidic sensors	5
8	Illustrate briefly about tacho generator	5

PART B
Answer any three questions. Each question carries 10 marks

9	a)	With neat sketches explain	10

      (i)   Gear pump

      (ii)   Variable displacement vane pump

10	a)	Which are the three filter positions?	3
	b)	Explain full flow and proportional flow filters with neat diagram	7
11		"Very small contamination may be undesirable in food & chemical industries". Explain any two types of compressors where air must not be contaminated	10
12		Draw and explain any one type spool valve. Write any two advantages of spool valve over poppet valve	10
13		Discuss about speed control techniques listed below with neat diagrams and applications.	10

(i) Meter in speed control

(ii) Meter out speed control

PART C
Answer any two questions. Each question carries 15 marks

14 a) Explain briefly about Proportional plus integral (P + I) controller with block diagram, construction diagram and equation.   15

15 a) Draw and explain volume booster   8

   b) Describe flapper nozzle with neat diagram in detail.   7

16   Write short notes on: 15

   (i)   Resolver

   (ii)   Inductosyn

17 a) Evaluate the working of stepping motor   7

   b) Elucidate encoders with diagram   8