Courses » Design Practice - II	Announcements	Course	Ask a Question	Progress	Mentor	FAQ	
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## Unit 6 - WEEK 05 Design Practice II

Course outline	Assignment 05_Design Practice 2
How to access the portal	The due date for submitting this assignment has passed.Due on 2018-10-03, 23:59 IST.As per our records you have not submitted this assignment.
WEEK 01 Design practice II	1) In the pneumatic valves, which one of the following is used as a working fluid?
WEEK 02 Design Practice II	Oil
WEEK 03 Design Practice II	Water None of them
WEEK 04 Design Practice II	No, the answer is incorrect. Score: 0
WEEK 05 Design Practice II	Accepted Answers: Air 2) Thermonneumatic actuation relies on the change in volume of sealed liquid or solid under loading <b>1 point</b>
<ul> <li>Electrochemical valves</li> </ul>	Thermal
Micropumps	Mechanical
Designing of peristaltic pumps	Chemical
Different types of pumps and sensors	No, the answer is incorrect.
Gas Sensors	Score: 0
Quiz : Assignment 05_Design Practice 2	Accepted Answers: Thermal
Solutions_Assignment 05 Design Practice 2	3) Shape-memory alloys (SMA) are materials such as titanium/nickel alloy, which, once mechanically deformed, <b>1</b> point return to their original shape upon a change of
WEEK 5 - FEEDBACK Design Practice - II	Resistance Load
Lecture notes_Microvalves	Density
Lecture notes_Electrochemical valves	Temperature No, the answer is incorrect. Score: 0
WEEK 06 Design Practice II	Accepted Answers: Temperature
WEEK 07 Design Practice II	4) A pneumatic microvalve has a circular silicon membrane as the valve seat. The membrane is 20 $\mu$ m thick and has <b>1</b> point a diameter of 4 mm. The valve is normally open with a gap of 20 $\mu$ m between the membrane and the valve inlet. Determine the pressure required for closing the valve at an inlet pressure of nin = 1 har. The opening diameter is 200 $\mu$ m
WEEK 08 Design Practice II	4,000 µm 20 µm
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## Design Practice - II - - Unit 6 - WEEK 05 Design...



100 kPa
9.6 kPa
1 kPa
No, the answer is incorrect.
Score: 0
Accepted Answers:
109.67 kPa

5) The valve described in Previous question is designed with a thermopneumatic actuator on top of the membrane. **1** point The actuator chamber is a cylinder with a height of 500 µm. If the chamber is filled with air and hermetically sealed, determine the temperature required for closing the valve at an inlet pressure of 1 bar. The initial pressure and temperature in the chamber are 1 bar and 27-degree C.

25 degree C
56 degree C
100 degree C
27 degree C
No, the answer is incorrect.
Score: 0

Accepted Answers: 56 degree C

6) A bubble valve is designed with a vapor bubble between channel sections with different widths of 50 and 200 μm **1 point** (Figure shown below). Determine the pressure difference the valve can withstand.



Figure. Thermocapillary effect (Marangoni effect): (a) a gas bubble is attracted to the heat source; a (b) a liquid plug is driven away from a heat source.



Design Practice - II - - Unit 6 - WEEK 05 Design...