

## Unit 3 - Introduction to MEMS-based Sensors

### Course outline

#### How to access the portal

#### Introduction

#### Introduction to MEMS-based Sensors

● Introduction to Microengineering Devices

● Introduction to Microengineering Devices Contd...

● Introduction to Microengineering Devices Contd...

● Solution: Week 1 Assignment

○ Quiz : Week 1 assignment on Introduction to MEMS-based Sensors

#### Fundamentals of Fabrication Techniques

#### Fundamentals of Fabrication Techniques contd...

#### Fundamentals of Fabrication Techniques contd...

#### Application of Fabrication Technology

#### Fabrication of Sensors for Cancer Diagnosis

#### Fabrication of a Device to Determine Efficacy of Drugs

#### Fabrication of Microchip for Rapid Drug Screening

#### Fabrication of a Smart Catheter

#### Lab: Introduction to Cleanroom and Cleanroom Equipments

#### Lab: Introduction to Equipments in Cleanroom

#### Lab: Cleanroom Equipments and Demonstration

#### Text Transcripts

## Week 1 assignment on Introduction to MEMS-based Sensors

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2019-08-14, 23:59 IST.**

1) What is the ideal base resistance of an inter-digitated electrode structure?

1 point

- Infinity  
 Zero

No, the answer is incorrect.

Score: 0

Accepted Answers:  
Infinity

2) PDMS is bonded to glass wafer by

1 point

- Plasma Bonding  
 Super Glue  
 UV tape  
 Any of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:  
Plasma Bonding

3) You have been introduced to flexible force sensors, piezoresistive sensors etc. Maximum stress of square membranes occurs at:

1 point

- Corner  
 Center  
 Edge  
 Uniform across the membrane

No, the answer is incorrect.

Score: 0

Accepted Answers:  
Edge

4) Why are commercially available silicon wafers round in shape?

1 point

- Silicon ingots are cylindrical  
 Mould cast is circular  
 Easy to handle  
 None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:  
Silicon ingots are cylindrical

5) Which among the following can be patterned using lithography

1 point

- Metal  
 Insulator  
 Semiconductor  
 All the above

No, the answer is incorrect.

Score: 0

Accepted Answers:  
All the above

6) Change in output of any sensor with respect to change in input is expressed as

1 point

- Sensitivity  
 Selectivity  
 Resolution  
 Hysteresis

No, the answer is incorrect.

Score: 0

Accepted Answers:  
Sensitivity

7) For MEMS-based breast cancer diagnosis device (cantilever based), why silicon nitride is used instead of silicon oxide:

1 point

- Silicon nitride is less expensive  
 Silicon nitride reduces stress generated in Silicon wafer  
 Silicon oxide is not an insulating layer  
 All the above

No, the answer is incorrect.

Score: 0

Accepted Answers:  
Silicon nitride reduces stress generated in Silicon wafer

8) Metal deposition is done and then patterned to get the IDE structures which you have seen in the lectures. Metal deposition is carried out mostly after deposition of oxide/nitride layer on silicon wafer surface. Is the statement true or false?

1 point

- True  
 False

No, the answer is incorrect.

Score: 0

Accepted Answers:  
True

9) What is the novelty of the rapid drug screening device as compared to standard drug screening methods?

1 point

- Allows for multiple analysis  
 Small sample volume required  
 Higher throughput  
 All the above

No, the answer is incorrect.

Score: 0

Accepted Answers:  
All the above

10) VOCs or Volatile Organic Compounds discussed extensively in the lectures can be used in:

1 point

- Clinical Applications  
 Food Technology  
 Gas sensors  
 All the above

No, the answer is incorrect.

Score: 0

Accepted Answers:  
All the above