



MCQ set #1: Introduction to MEMS and applications

Choose the most proper answer:

1. A complete micro system should:-
 - a) Detect process and evaluate external signals.
 - b) Make decisions based on obtained information.
 - c) Convert decisions into corresponding actuator commands.
 - d) All of the above. <
2. The MST has become important source for:-
 - a) Sensors.
 - b) Actuators.
 - c) Entire control modules.
 - d) All of the above. <
3. Micromechanics is:-
 - a) Development and production of miniaturized systems.
 - b) In general the three-dimensional structuring of solids. <
 - c) Optical signal transmission in light- conducting media.
 - d) Developing and producing fluid element.
4. Micro electronic integrated circuit can be thought as theof a system
 - a) Brain <
 - b) Eyes
 - c) Arms
 - d) All of the above
5. Most micro-products available today are:-
 - a) Microactuators.
 - b) Microsensors. <
 - c) Microoptics.
 - d) Pumps.
6. MEMS Technology allows complex electro mechanical systems to be manufactured using.....
 - a) Batch fabrication techniques <
 - b) Mechanical techniques
 - c) Medical techniques
 - d) Electrical techniques
7. One of the following properties is an advantage of MEMS technology :
 - a) Miniaturization with loss of functionality
 - b) High power
 - c) Fast actuation techniques<
 - d) None of the above
8. MEMS consists of:
 - a) Mechanical microstructure
 - b) Microsensors
 - c) Microactuator
 - d) All the above<
9. MEMS was firstly used in:
 - a) 1999
 - b) 1986
 - c) 1990 <
 - d) 1993
10. MEMS devices are within the range:
 - a) 1pm-1nm
 - b) 1nm-1µm
 - c) 1µm-1mm <
 - d) 1mm-1cm
11. From the challenges that face MEMS technology:
 - a) High investment costs
 - b) Small-volume production has not been profitable
 - c) Early stage of development
 - d) All the above<
12. The largest MEMS market consumers are:
 - a) Automotive
 - b) IT and entertainment <
 - c) Biomedical
 - d) All the above
13. Is/are MEMS material deposition method:
 - a) Surface micromachining
 - b) LIGA
 - c) LCVD and LECD
 - d) All the above<
14. MEMS advantages is/are..... :
 - a) Cost savings
 - b) Reduction of size
 - c) New features and functions
 - d) All the above<
15. the advantages of micro needle used in drug delivery :
 - a) Painless
 - b) Doesn't reach to nerve
 - c) Eliminates vibration of the hand
 - d) a&b <
16.eliminates vibration of the hand:
 - a) Microsubmarine
 - b) Minimally invasive surgery
 - c) Active tremor cancellation <
 - d) Implantable electrodes

17. In the implantable electrodes, the thickness of polyimide foils electrodes is.....

- a) 0.1 m
- b) 10 nm
- c) 10 mm
- d) 10 μ m <

19. Cardiac pacemakers are used.....

- (a) For navigation inside the body.
- (b) For increasing the blood flow through the catheter.
- (c) To minimize the surgical impact on the body.
- (d) To manage a heart beat that is too slow or irregular. <

21. one of the following body functions is not monitored by the implantable sensors:

- a) Glucose for diabetics
- b) Temperature
- c) Heartbeat <
- d) Pressure

23.is a device used for intestinal imaging, with wireless power and video transfer:

- a) Cardiac pacemaker.
- b) Norika3. <
- c) Implantable sensor.
- d) Personal healthcare system.

25. One of the following is an Environmental Application :

- a) High Quality Filters
- b) Soil Quality <
- c) Pollution Sensor
- d) a & c

27. can be measured by MEMS:

- a) Relative humidity
- b) Barometric pressure
- c) Aviation
- d) All of the above. <

18. in hearing aids, to protect ear from loud sounds we use

- a) Attenuator
- b) Insulator
- c) Automatic gain control device <
- d) Non of the above

20. One of the following is not an implantable system:

- a) Cardiac peacemakers
- b) Hearing aids
- c) Artificial limbs
- d) Drug delivery <

22. Hearing Aids, pacemakers and artificial Limbs are.....:

- a) Measurements devices
- b) Implantable devices <
- c) Power devices
- d) None of the above.

24. The advantages of the Lab-On-a-Chip are:

- a) Inexpensive
- b) Fluid volume is very small (samples)
- c) Carry out DNA analysis
- d) All of the above <

26. Which of the following is a new energy resource:

- a) Solar photo voltaic
- b) Biomass
- c) Kinetic
- d) All of the above <

28. T sensors is used in the following applications:

- a) Clinical chemistry analyzer
- b) Drug and hormone analyzer
- c) Pollution Sensor
- d) a & b <