Program: BE Biomedical Engineering

Curriculum Scheme: Revised 2012

Examination: Fourth Year Semester VIII

Course Code: BMC802 and Course Name: Biomedical Microsystems

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1	A must apparel to enter a class 100 clean room is
Option A:	rain coat
Option B:	bunny suit
Option C:	Clean clothes
Option D:	T-Shirt and Jeans
Q2	Which of the following is a type of etch stop technique?
Option A:	Carbon
Option B:	Mechanical
Option C:	Phosphorous
Option D:	Electrochemical
Q3	Following is an important material property of IDDS
Option A:	Volume
Option B:	Biocompatibility
Option C:	Density
Option D:	Viscosity
Q4	Which of the following are types of silicon wafers?
Option A:	t-type, z-type
Option B:	z-type, s-type
Option C:	p-type, n-type
Option D:	s-type, t-type
Q5	Following is a Drug delivery method
Option A:	Continuous
Option B:	Transmission
Option C:	Reflection
Option D:	Amplification
Q6	Clark Oxygen electrode contents ____ cathode
Option A:	Platinum

Option B:	Silver
Option C:	Silver Chloride
Option D:	gold
Q7	A change in electrical resistance of solids when subjected to stress is known as
Option A:	piezoelectricity
Option B:	piezocrystal
Option C:	piezocapacitance
Option D:	piezoresistance
Q8	Common light sources used in photolithography have wavelength in ____ range
Option A:	100 - 250 nm
Option B:	300 - 500 nm
Option C:	500 - 700 nm
Option D:	850 - 1000 nm
Q9	Following acts as a detector in Optical sensor
Option A:	Light emitting diode
Option B:	Photo diode
Option C:	light pipe
Option D:	Transistor
Q10	Which type of biosensors utilize microorganisms as biosensing element
Option A:	Catalytic biosensor
Option B:	Affinity biosensor
Option C:	Immunosensors
Option D:	transducer
Q11	For Low Pressure Chemical Vapor Deposition (LPCVD), ____ is essential.
Option A:	High temperature
Option B:	Low temperature
Option C:	High pressure
Option D:	Humidity
Q12	The wet etching technique
Option A:	removes unmasked area
Option B:	removes masked area
Option C:	add material on masked area
Option D:	add material on unmasked area

Q13	____ level is Level 1 of microsystems packaging
Option A:	Die
Option B:	Device
Option C:	System
Option D:	Card
Q14	Which of these biosensors use the principle of heat released or absorbed by a reaction
Option A:	Potentiometric biosensor
Option B:	Optical biosensors
Option C:	Piezo-electric biosensors
Option D:	Calorimetric biosensors
Q15	Silicon wafer is made up of
Option A:	silicon nitride
Option B:	silicon dioxide
Option C:	pure silicon
Option D:	silicon monoxide
Q16	_____ is a resist used in electron beam lithography
Option A:	PDMS
Option B:	conducting polymer
Option C:	polyaniline
Option D:	PMMA
Q17	_____ is a type of photoresists
Option A:	PPR
Option B:	Dark Field
Option C:	Bright Field
Option D:	CPR
Q18	µTAS systems comprised of
Option A:	only result analysis
Option B:	a sampling unit, a microfluidic unit, a detector system and an electronic controller
Option C:	only separation and detection of samples
Option D:	only sample analysis
Q19	RIE stands for
Option A:	Resonate ion etching
Option B:	Reactive ion etching
Option C:	Reaction ion etching

Option D:	Reflective ion etching
Q20	Positive resists can be developed in
Option A:	KOH
Option B:	HNA
Option C:	HCl
Option D:	HF
Q21	Wafer dicing means
Option A:	sawing the wafer
Option B:	printing the wafer
Option C:	implanting the wafer
Option D:	surface bonding
Q22	____ is an optical technique used for determination of the dielectric properties of thin films
Option A:	AFM
Option B:	Photolithography
Option C:	SEM
Option D:	Ellipsometer
Q23	Sacrificial layer is an essential component in _____
Option A:	Bulk micromachining
Option B:	LIGA
Option C:	Surface micromachining
Option D:	wet etching
Q24	There are ____ levels of packaging in electronic systems
Option A:	Three
Option B:	Two
Option C:	One
Option D:	Four
Q25	Which technique is utilized for patterning of large and non-planar substrates?
Option A:	Photolithography
Option B:	Soft lithography
Option C:	Sputtering
Option D:	CVD