NMAM INSTITUTE OF TECHNOLOGY, NITTE

Off-Campus Centre of Nitte (Deemed to be University)

Second Semester B.Tech (CBCS) Degree Examinations

CY1003-1-MATERIALS CHEMISTRY FOR COMPUTER SYSTEMS

MULTIPLE CHOICE QUESTIONS: UNIT – II

Sensors, PCB & Nanomaterials

1.	**In sensors, signal transducer is the one which transforms physical or chemical information into an analytically useful …….. signal.**			
	A)	Chemical	B)	Physical
	C)	Electrical	D)	Mechanical
Ans	**C)**	**Electrical**		
2.	**The sensors that are used to monitor the concentrations of chemical substances are called as ……**			
	A)	Chemical Sensor	B)	Physical Sensor
	C)	Mechanical Sensor	D)	Concentration Sensor
Ans	**A)**	**Chemical Sensor**		
3.	**In an electrochemical sensor, the active component that converts chemical reactions into measurable electrical signals is called as ……..**			
	A)	Receptor	B)	Amplifier
	C)	Detector	D)	Transducer
Ans	**D)**	**Transducer**		
4.	**The role of the electrode in an electrochemical sensor is it acts like …….**			
	A)	a modifier	B)	an amplifier
	C)	a transducer	D)	a detector
Ans	**C)**	**a transducer**		
5.	**The cathode which is used in the electrochemical sensing of Dissolved oxygen (DO) is ……..**			
	A)	MWCNT	B)	Glucose Oxidase
	C)	Ag	D)	rGO
Ans	**C)**	**Ag**		
6.	**Electrochemical DO sensors are an example of ……**			
	A)	Potentiometric Sensor	B)	Amperometric Sensor
	C)	Conductometric Sensor	D)	Colorimetric Sensor
Ans	**B)**	**Amperometric sensor**		
7.	**Electrochemical DO sensors are also called as ……**			
	A)	Clark type sensor	B)	Spark type sensor
	C)	Click type sensor	D)	Stack type sensor
Ans	**A)**	**Clark type sensor**		
8.	**The anode used in the Electrochemical DO sensor is …….**			
	A)	Au	B)	Ag
	C)	Pt	D)	Zn
Ans	**D)**	**Zn**		
9.	**The sensing layer of the optical DO sensor contains ……..**			
	A)	Aromatic hydrocarbons	B)	Polycyclic hydrocarbons
	C)	Fluorescent dyes	D)	Congo red dye
Ans	**C)**	**Fluorescent dyes**		
10.	**The solid electrolyte that is used in the electrochemical gas sensing of SO_x is …….**			
	A)	KOH	B)	NaOH

	C)	K_2SO_4	D)	H_2SO_4
	C)	**K_2SO_4**		
11.	**The reference electrode used in the electrochemical gas sensing of NO_x is ……..**			
	A)	Ag/AgCl	B)	$Zn/ZnCl_2$
	C)	$Fe/FeCl_2$	D)	$Cu/CuSO_4$
Ans	**A)**	**Ag/AgCl**		
12.	**In the electrochemical sensing of NO_x, the working electrode glassy carbon electrode will be modified with ……**			
	A)	MWCNT-Ag@Pt	B)	rGo-Co_3O_4@Pt
	C)	rGo-Co_3O_4@Ag	D)	rGo-MWCNT@Pt
Ans	**B)**	**rGo-Co_3O_4@Pt**		
13.	**What is the function of a transducer in an electrochemical sensor?**			
	A)	To convert the reaction into measurable potential.	B)	To convert the reaction into a measurable electrical signal
	C)	To convert the reaction into an optical signal	D)	To convert the reaction output into a mechanical displacement
Ans	**B)**	**To convert the reaction into a measurable electrical signal**		
14.	**…….. are electronic components designed to detect and convert incident light rays into electrical signals.**			
	A)	Conductometric sensors	B)	Thermometric sensors
	C)	Optical sensors	D)	Electrochemical sensors
Ans	**C)**	**Optical sensors**		
15.	**…….. type of coating is used to connect the two sides of printed circuit boards.**			
	A)	Electroplating	B)	Organic Coating
	C)	Electroless Plating	D)	Inorganic Coating
Ans	**C)**	**Electroless Plating**		
16.	**The full form of PCB is …….**			
	A)	Polished Circuit Board	B)	Printed Circuit Board
	C)	Polymer Circuit Board	D)	Printed Circular Board
Ans	**B)**	**Printed Circuit Board**		
17.	**In an electroless plating, the surface of the substrate will be activated by treating it with ……**			
	A)	$SnCl_2$ and $PdCl_2$	B)	Alkali
	C)	Alcohol	D)	Water
Ans	**A)**	**$SnCl_2$ and $PdCl_2$**		
18.	**The complexing agent that is used in the electroless plating of copper is ……**			
	A)	$CuSO_4$	B)	NaOH
	C)	Formaldehyde	D)	EDTA
Ans	**D)**	**EDTA**		
20.	**The reducing agent that is used in the electroless plating of copper is …….**			
	A)	EDTA	B)	$K_2Cr_2O_7$
	C)	Formaldehyde	D)	HCl
Ans	**C)**	**Formaldehyde**		
21.	**During electroless plating, copper will undergo …… reaction**			
	A)	Reduction	B)	Oxidation
	C)	Substitution	D)	Neutralization
Ans	**B)**	**Reduction**		
22	**Buffer which is used in the electroless plating of copper is ……..**			
	A)	NH_4OH-NH_4Cl	B)	$CuSO_4$-$CuCl_2$
	C)	NaOH-NaCl	D)	NaOH-Rochelle salt
Ans	**D)**	**NaOH-Rochelle salt**		
23.	**Electroless plating is driven by the …… reaction occurring on a pretreated active surface.**			
	A)	Autocatalytic oxidation	B)	Autocatalytic redox
	C)	Autocatalytic reduction	D)	Autocatalytic displacement
Ans	**B)**	**Autocatalytic redox**		

24.	**1 nm = ……**			
	A)	10^{-7} m	B)	10^{-9} m
	C)	10^{9} m	D)	10^{-3} m
Ans	**B)**	**10^{-9} m**		
25.	**Materials having two dimensions in the nanoscale are called ..... nanomaterials**			
	A)	Zero Dimensional	B)	One Dimensional
	C)	Two Dimensional	D)	Three Dimensional
Ans	**B)**	**One Dimensional**		
26.	**An example of zero-dimensional nanomaterials is ……**			
	A)	Nanosheets	B)	Nanotubes
	C)	Nanospheres	D)	Nanowires
Ans	**C)**	**Nanospheres**		
27.	**An example of one-dimensional nanomaterials is ……**			
	A)	Nanosheets	B)	Nanoplates
	C)	Nanospheres	D)	Nanowires
Ans	**D)**	**Nanowires**		
28.	**An example of two-dimensional nanomaterials is ……**			
	A)	Nanosheets	B)	Nanotubes
	C)	Nanospheres	D)	Nanowires
Ans	**A)**	**Nanosheets**		
29.	**Choose the INCORRECT statement for the sol-gel method of nanoparticle synthesis.**			
	A)	Sol is a stable suspension of colloidal particles in a liquid	B)	Metal alkoxides are the preferred precursors in sol-gel process
	C)	Urea is used as fuel	D)	The gel is formed by the polymerization reaction
Ans	**C)**	**Urea is used as fuel**		
30.	**Which is the preferred precursor in the sol-gel method?**			
	A)	Metal chlorides	B)	Metal nitrates
	C)	Metal hydroxides	D)	Metal alkoxides
Ans	**D)**	**Metal alkoxides**		
31.	**CVD stands for …….**			
	A)	Carbon Vapor Dissolution	B)	Chemical Vapor Deposition
	C)	Carbon Vapor Deposition	D)	Chemical Vapor Dissolution
Ans	**B)**	**Chemical Vapor Deposition**		
32.	**…… is the carbon source used in the synthesis of carbon nanotubes by CVD technique.**			
	A)	Nitrogen gas	B)	Argon gas
	C)	Hydrocarbon gas	D)	Hydrogen gas
Ans	**C)**	**Hydrocarbon gas**		

Memory Devices & Display Systems

33.	**Which of the following is a permanent memory in the computer?**			
	A)	RAM	B)	ROM
	C)	CPU	D)	CD ROM
Ans	**B)**	**ROM**		
34.	**The information recorded on EEPROM is erased using:**			
	A)	Ultraviolet light	B)	Electrical signals
	C)	Sunlight	D)	Infrared radiation
Ans	**B)**	**Electrical signals**		
35.	**Which among the following is a Flash memory device?**			
	A)	Hard Disc Drive (HDD)	B)	CD Drive
	C)	RAM	D)	USB drive
Ans	**D)**	**USB drive**		
36.	**The full form of EPROM is ……..**			
	A)	Easy Programmable Read-Only Memory	B)	Erasable Programmable Read-Only Memory

	C)	Eradicate Programmable Read-Only Memory	D)	Electrically Programmable Read-Only Memory
Ans	**B)**	**Erasable Programmable Read-Only Memory**		
37.	**The full form of PROM is ……..**			
	A)	Previous Read-Only Memory	B)	Programmable Read-Out Memory
	C)	Programmable Read-Only Memory	D)	Permanent Read-Only Memory
Ans	**C)**	**Programmable Read-Only Memory**		
38.	**An example for a non-volatile memory device is ……**			
	A)	SPRAM	B)	ROM
	C)	RAM	D)	RRAM
Ans	**B)**	**ROM**		
39.	**Which among the following memory used in a digital camera?**			
	A)	Virtual memory	B)	Flash Memory
	C)	Main Memory	D)	Cache Memory
Ans	**B)**	**Flash Memory**		
40.	**ROM is defined as …….**			
	A)	Read Out Memory	B)	Read Once Memory
	C)	Read Only Memory	D)	Read One Memory
Ans	**C)**	**Read Only Memory**		
41.	**What is the full form of RAM?**			
	A)	Read Access Memory	B)	Readable Access Memory
	C)	Random Accumulator Memory	D)	Random Access Memory
Ans	**D)**	**Random Access Memory**		
42.	**Which computer memory chip allows simultaneous both read and write operations?**			
	A)	ROM	B)	RAM
	C)	PROM	D)	EEPROM
Ans	**B)**	**RAM**		
43.	**In which type of memory, once the program or data is written, it cannot be changed?**			
	A)	PROM	B)	EPROM
	C)	EEPROM	D)	Flash
Ans	**A)**	**PROM**		
44.	**Which type of ROM is used for erasing purposes only?**			
	A)	Flash	B)	WROM
	C)	EEPROM	D)	PROM
Ans	**C)**	**EEPROM**		
45.	**In which type of ROM, data can be erased by ultraviolet light and then reprogrammed by the user or manufacturer?**			
	A)	EPROM	B)	EEPROM
	C)	PROM	D)	WROM
Ans	**A)**	**EPROM**		
46.	**The full form of EEPROM is ……..**			
	A)	Easy Erasable Programmable Read-Only Memory	B)	Electrically Erasable Programmable Read Only Memory
	C)	Easy Eradicate Programmable Read-Only Memory	D)	Electrically Easy Programmable Read-Only Memory
Ans	**B)**	**Electrically Erasable Programmable Read Only Memory**		
47.	**An example of a volatile memory device is ……..**			
	A)	Hybrid Memory	B)	Random Access Memory
	C)	Read Only Memory	D)	Flash Memory
Ans	**B)**	**Random Access Memory**		
48.	**Which of the following is a popular type of transistor-type memory?**			
	A)	FeRAM	B)	PROM
	C)	DRAM	D)	RRAM
Ans	**C)**	**DRAM**		

49.	**Which property of polymers makes them suitable for applications in memory devices?**			
	A)	High electrical resistance	B)	Low thermal stability
	C)	Bistable state	D)	Brittle nature
Ans	**C)**	**Bistable state**		
50.	**Which of the following is NOT a phase of liquid crystals?**			
	A)	Nematic	B)	Isotropic
	C)	Smectic	D)	Amorphous
Ans	**D)**	**Amorphous**		
51.	**Mesophase refers to:**			
	A)	Solid state	B)	Liquid state
	C)	Liquid crystal state	D)	Gaseous state
Ans	**C)**	**Liquid crystal state**		
52.	**Liquid crystals are usually composed of ……**			
	A)	Coil-like molecules	B)	Rod-like molecules
	C)	Oval molecules	D)	Triangular molecules
Ans	**B)**	**Rodlike molecules**		
53.	**Which phase of liquid crystals constitute molecules having twisted helical structure?**			
	A)	Nematic	B)	Isotropic
	C)	Smectic	D)	Cholesteric
Ans	**D)**	**Cholesteric**		
54.	**Liquid crystal displays (LCDs) work based on the principle of:**			
	A)	Electromagnetic induction	B)	Electrochemical reactions
	C)	Opto-electronic effect	D)	Liquid crystal polarization
Ans	**C)**	**Opto-electronic effect**		
55.	**Which of the following phases of liquid crystals has the highest degree of order?**			
	A)	Smectic	B)	Nematic
	C)	Cholesteric	D)	Isotropic
Ans	**A)**	**Smectic**		
56.	**Which property of liquid crystals makes them suitable for display technologies?**			
	A)	High electrical conductivity	B)	Low viscosity
	C)	Low melting point	D)	Optical anisotropy
Ans	**D)**	**Optical anisotropy**		
57.	**The orientational behaviour of lyotropic crystals is a function of ……..**			
	A)	Concentration	B)	Solvent
	C)	Concentration and solvent	D)	Neither concentration nor solvent
Ans	**C)**	**Concentration and solvent**		
58.	**The full form of LEC is ……**			
	A)	Light-emitting Electrochemical Cell	B)	Liquid-emitting Electromagnetic Cell
	C)	Light-emitting Electrical Cell	D)	Light-emitting Electronic Cell
Ans	**A)**	**Light-emitting Electrochemical Cell**		

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