

Multiple Choice Questions:

Module 1

1. Nanomaterials are considered as unique and important materials due to its _____
 - a) Bulk properties
 - b) Size
 - c) Structure
 - d) Novel properties and functions**

2. "There is a plenty of room at the bottom" said by American Physicist -----
 - a) Einstein
 - b) Richard Feynman**
 - c) Norio Taniguchi
 - d) Maxwell

3. _____ is the scientific terminology for assessing the environment, including human exposures to natural and synthetic chemicals, based on sampling and analysis of an individual organism's tissues and fluids.
 - a) Nanosensors
 - b) Signal transducer
 - c) Biosensors
 - d) Biomonitoring**

4. Among the following terms which one is considered as a 1-Dimensional nano structure?
 - a) Nano particles
 - b) Nano wires
 - c) Quantum well**
 - d) Quantum Dots

5. Among the following terms which one is considered as a 2-Dimensional nano structure?
 - e) Nano particles
 - f) Quantum wires**
 - g) Quantum well
 - h) Quantum Dots

6. _____ have a property of colour production which was used in pesticide detection.
 - a) Graphene - NPs
 - b) Au - NPs**
 - c) Ag – NPs
 - d) Carbon Nano Tubes

7. Pesticide degradation is one of the _____ process
- a) Biomonitoring
 - b) Nanomonitoring
 - c) Nano Bioremediation**
 - d) Bioremediation
8. _____ measures the changes in color, fluorescence or electrical potential either directly or indirectly.
- a) HRTEM
 - b) Biosensors**
 - c) SEM
 - d) Filters
9. Secondary air pollutant is:
- A. Ozone**
 - B. Carbon monoxide
 - C. Nitrogen Dioxide
 - D. Sulphur dioxide
10. Which of the following is the major photochemical smog?
- A. Peroxyl acetyl nitrate
 - B. Smog
 - C. Hydrogen peroxide
 - D. Chlorofluorocarbon**
11. Excess of fluoride in drinking water causes:
- A. Lung disease
 - B. Intestinal infection
 - C. Fluorosis**
 - D. None of the above
12. The extensively used nano particles as catalyst is _____
- a) Silver
 - b) Copper
 - c) Gold**
 - d) Cerium
13. Which of the following is responsible for turning yellow Taj Mahal?
- A. Nitrogen dioxide**

- B.Sulphur
- C.Chlorine
- D. Sulphur dioxide**

14. What is Air Quality Index?

- A.It tells about the sound pollution.
- B.It measures air pollution mainly sulphur content in the air.
- C.It measures ozone levels in your area.**
- D.It checks the colour of the air.

15. Which of the following is a liquid form of aerosol?

- a) Fume
- b) Dust
- c) Mist**
- d) Smoke

16. Which of the following is a secondary air pollutant?

- a) SPM
- b) PAN**
- c) SO₂
- d) NO₂

17. Where we can find water soluble radioactive isotopes?

- a) In radioactive reactor
- b) In radioactive coolant
- c) In radioactive shield
- d) In radioactive waste**

18. How to minimize the pollution of water pollution due organic chemicals that release to water bodies?

- a) To remove all the aquatic organisms from the water
- b) To purify water manually after released to the water bodies
- c) Purify the water before enter the water directly from industries**

d) Leave the water bodies without using it

19. For high sensitivity or selectivity environmental sensors to sense the gaseous chemical like

- _____
- a) CO₂
 - b) NO₃
 - c) O₂
 - d) **NO**

20. Industrial catalysts should have _____ surface area.

- a) **High**
- b) Low
- c) Moderate
- d) No

21. Which property of Nanomaterials make them suitable to be used for elimination of pollutants?

- a) High purity
- b) Better thermal conductivity
- c) **Enhanced chemical activity**
- d) Small size

22. _____ instrumentation commonly reveals that the CLAYs are composed of stacked tetrahedral and octahedral sheets.

- a) SEM (Scanning Electron Microscope)
- b) FESEM (Field Effect - Scanning Electron Microscope))
- c) AFM (Atomic Force Microscope))
- d) **HRTEM (High Resolution Transmission Electron Microscope)**

23. In Electric High Efficiency Particulate Arrest (HEPA) air filtration system has metal dust filter coated with _____ in nm thickness.

- a) Graphene - NPs
- b) Au - NPs
- c) **Ag – NPs**
- d) Carbon Nano Tubes

24. In which filtration mechanism the velocity of particulates can act as important criteria in order to purify the AIR system?

- a) Diffusion
- b) Interception
- c) **Inertial impaction**
- d) Electro-static attraction

25. Surface area of a nanomaterials are _____ bulk materials

- a) **Higher than**
- b) Lesser than

- c) Equal to
- d) Much lesser than

Module 2 & 3

1. Which of these biosensors use the principle of heat released or absorbed by a reaction?
 - A. Potentiometric biosensor
 - B. Optical biosensors
 - C. Piezo-electric biosensors
 - D. **Calorimetric biosensors**
2. The biological response of the biosensor is determined by _____
 - A. **biocatalytic membrane**
 - B. physio-chemical membrane
 - c) chemical membrane
 - d) artificial membrane
3. What is the effect of potassic fertilizers?
 - A. **It makes the plants more resistant to disease**
 - B. It improve the grain quality
 - C. It makes the plants susceptible to disease
 - D. All of the above
4. Incorporating nanomaterials into the packaging polymer to improve
 - A. physical performance
 - B. durability
 - C. biodegradation.
 - D. **All the above**
5. What is fertilization?
 - A **Adding or applying substances to the soil as food for plants**
 - B Supplying water to fields for the crops
 - C Using living organisms to improve products
 - D Growing only one crop in a large given area
6. GPS Precision farming uses what new technology to determine crop needs and crop health?
 - A Global positioning system**
 - B Fortune teller
 - C Professional Medical System
 - D Gigantic positioning satellite
7. Which problem occurs if too much fertilizer is used?
 - A Lack of minerals and salt in the soil
 - B **Contaminated water**

- C Flooding of the soil
- D Oversized harvest

8. Geoinformatics is a new discipline concerned with the ____ of spatial data and the Processing techniques in spatial information systems.
- A) Modelling
 - B) robabilistic model
 - C) Deterministic model
 - D) None of the above
9. ____ is used to operationalise precision farming at the farm level
- A) Variable rate applicator
 - B) Variable rate technology
 - C) Variable rate application
 - D) None of the above
10. ____ deficiency is a most common micronutrient problem that adversely affects agricultural production in alkaline soils with calcium carbonate
- A. Carbon
 - B. Zinc
 - C. Titanium
 - D. Silver
11. Fertilizers with ____ are useful as slow release fertilizers, because sulfur contents are beneficial especially for sulfur deficient soils
- A. Zinc nanocoating
 - B. Carbon nanocoating
 - C. sulphur nanocoating
 - D. Silver nanocoating
12. Microorganisms convert organic matter into simple compounds that provide essential nutrients to plants, improve soil fertility, maintain the natural habitat of the soil and increase crop yield.
- A. Biofertilizers
 - B. Nano fertilizers
 - C. Nano-herbicide
 - D. Nano pesticides
13. ____ is the process to maximize output from crops while minimizing the input of fertilizers, pesticides, herbicides, etc. through monitoring environmental variables and applying targeted action
- A. Precision farming
 - B. Farming
 - C. Nano farming
 - D. None of the above
14. Using ____ (polymer + nanoparticles) can help provide enhanced barrier performance in food packing.
- A. nano-thin coatings

- B. bio composite
 - C. polymer coating
 - D. Surface Biocides
15. Which of the below is not a silent feature of nanocoating in packing material
- A. Oxygen and moisture penetration
 - B. self-life
 - C. Aroma Preservation
 - D. Time-invariant transparency,
16. Incorporating nano materials with antimicrobial properties on the packaging surface of packaging material is known as
- A. Surface Biocides
 - B. Nano-coatings
 - C. Intelligent Packaging
 - D. None of the above
17. The first successful example of a polymer–clay nanocomposite
- A. Polyethylene terephthalate (PET),
 - B. Polystyrene (PS)
 - C. Polyvinyl chloride (PVC)
 - D. nylon-6
18. Incorporating nanosensors to monitor and report on the condition of the food, they are able to respond environmental changes inside the package
- A. Intelligent Packaging
 - B. Nano-coatings
 - C. Surface Biocides
 - D. Polymer nanocomposites
19. _____ is prepared by vegetable oil, corn-starch, potato- starch or microbial.
- A. Bio-plastics
 - B. Polycarbonates (PC)
 - C. Polyamides (nylons)
 - D. Polystyrene (PS)
20. _____ utilizes remote sensing devices, computers and global satellite positioning systems to analyze various environmental conditions in order to determine the growth of plants.
- A. Farming
 - B. Nano farming
 - C. Precision farming
 - D. None of the above
21. Flow of electrons in Semiconducting materials or in vacuum devices are known as
-
- a. Electricity
 - b. Electronics
 - c. Spintronics
 - d. Thermo-electricity

22. Carbon Nanotubes can be used as wires due to _____ which will reduce transmission power loss.
- e. lower resistance
 - f. lower mechanical strength
 - g. increases heat emission
 - h. lower ductility
23. _____ have been recognized as next generation photonic and electronic dominant components due to its efficient collection of photo generated carriers when core and shell segments are engineered to be thinner than minority carrier diffusion lengths
- i. Spintronics devices
 - j. Thermoelectric devices
 - k. Magnetocaloric devices
 - l. Semiconductor Nanowires
24. Nanowires are more conductive to _____
- m. Heterogeneous mixed solutions
 - n. Polymers based solutions
 - o. Emulsions
 - p. None of the above
25. _____ is the traditional ceramics which are made from raw materials possess on clay, followed by heating
- q. Gemstone
 - r. Nanoclay
 - s. Porcelain
 - t. Synthetic Stone
26. _____ based metallic conductors can be used as wires and coils to replace copper wire conductor in a small electric transformer
- u. Silicon
 - v. Carbon Nanotube
 - w. Fullerene
 - x. Aluminium
27. The first transistors built in 1947 were over 1 centimeter in size; the smallest working transistor today is _____ long.
- y. 25 nm
 - z. 50 μm
 - aa. 7 nm
 - bb. 0.1 nm
28. The spin of the electron is manipulated with magnetic and electric fields; the result is a _____ that carries more information than charge alone.
- cc. AC current
 - dd. Spin current

- ee. DC Current
- ff. Spin-polarized current

29. Which technology could overcome photon losses and exciton quenching mechanisms in Opto-electronic devices?

- gg. Carbon Nanotubes
- hh. Organic Light Emitting Diode
- ii. Organic Light emitting Transistor
- jj. Quantum Dot LED

30. Behind the QLED structure, the _____ Nanoparticles can act as Charge Transport Layer (CTL).

- kk. ZnO
- ll. TiO₂
- mm. GaAs
- nn. GaP

31. Medium-Scale Integration (MSI) contains _____ numbers of transistors in Integrated Circuit

- oo. 1 to 10
- pp. 10 to 500
- qq. 1,00,000 and more
- rr. 20000 to 1,00,000

32. Hardware devices that convert a controller command signal into a change in a physical parameter is known as _____

- ss. Biosensor
- tt. Nanosensor
- uu. Actuator
- vv. Amplifier

33. Which is the example for Electrical Actuator?

- ww. Transformer
- xx. Electric motor
- yy. Amplifier
- zz. None of the above

34. _____ is the responsible for converting some type of physical phenomenon into a quantity measurable by a data acquisition (DAQ) system.

- aaa. Actuator
- bbb. Transducer
- ccc. Nanoparticles
- ddd. Sensor

35. _____ are the quantum analog of the classical bits.

- eee. Quantum Bits
- fff. Binary digits

ggg. Photons
hhh. Phonons

36. Qubits considers binary logic along with _____

- iii. Superpositions of 0's and 1's
- jjj. singular of 0's and 1's
- kkk. New coding system
- lll. Either 0's nor 1's

37. Qubits must obey the _____

- mmm. Law of Quantum mechanics
- nnn. Law of gravitation
- ooo. Law of Classical mechanics
- ppp. Law of Newtonian mechanics

38. The two quantum states can be added together, and the result is another valid quantum state. This fundamental of quantum mechanics known as _____

- qqq. Entanglement
- rrr. Quantization
- sss. Wave-particle duality
- ttt. Superposition

39. _____ are structures that can confine and manipulate a single electron to be acted as a qubit.

- uuu. Quantum wire
- vvv. Quantum Well
- www. Quantum Dots
- xxx. All the above

40. Transmon qubits are one type of _____ that use Josephson junctions to create a single magnetic flux.

- yyy. Conducting qubits
- zzz. Semiconducting qubits
- aaaa. Superconducting qubits
- bbbb. Insulating qubits

41. The three qubits gives us _____ states and also it will be found in superposition of the same states.

- cccc. 8
- dddd. 16
- eeee. 4
- ffff. 2

42. With the help of magnetic field arranging the spin of electron as per the data given is called as _____

- gggg. Polarization
- hhhh. Magnetization

iii. Magnetic Data Storage/Recording

jjjj. Spin Polarization

43. _____ data storage does the recording as 5-dimensional optical recording and stores the data in layered disk.

kkkk. Magnetic

llll. Electronic

mmmm. Classic Optical

nnnn. Plasmonic

44. Light can control light during optical communication is called _____ switching

oooo. Electrical

pppp. Electronic

qqqq. Optical

rrrr. Normal

45. All Optical switching is _____ on data rate and data protocol

ssss. Depend

tttt. Independent

uuuu. Relies

vvvv. Follows

46. Interferometric device effect is being used in _____ Switches

www. Electronic

xxxx. Optical

yyyy. Electro-optical switches

zzzz. Magneto-optical switches

47. By injecting charge carriers at a material interface, _____ reduces at one side of the interface

aaaa. Refractive Index

bbbb. Conductivity

cccc. Reflectivity

dddd. Plasmon effect

48. Refractive index of materials generally _____ with increase in temperature

eeee. Stays constant

ffff. varies continuously

gggg. decreases

hhhh. increases

49. Change in polarization of light as it travels through the medium interacting with the magnetic field. This rotation of the plane of polarization is known as _____

iiii. Compton effect

jjjj. Faraday's effect

kkkk. Raman Effect

llll. Dindol Effect

Module 4 & 5

MCQ Question Bank

1. _____ are known as one dimensional nano-scale elements

Nanoparticle

Quantum Dots

Nanotubes/Nanorods

All of the above

2. In _____ method the nanofibers prepared by under the application of water pressure on one side and restrain from the porous membrane causes extrusion of the polymer.

Template Synthesis

Wet Chemical Synthesis

Sol-Gel Synthesis

Self-Assemble Synthesis

3. In Electrospinning process, the DC voltage supply in the range of _____

micro Volt

milli Volt

Kilo Volt

Mega Volt

4. Molecular entanglement of solution increases when polymer has _____ becomes higher

Molecular weight

Molar Concentration

Solubility

pH value

5. In electrospinning process _____ plays a key role in beads formation along the fiber length

Molar Concentration

Solubility

pH value

Surface Tension

6. Increasing the concentration of the polymeric solution increases the _____, which increases the chain entanglement among the polymer chains

Solubility

Viscosity

Temperature

pH value

7. _____ and its copolymers were commonly used in scaffold fabrication

Polysulfone

Poly(lactic acid)

Polystyrene

Polyethylene

8. Solution with great _____ reduces the bead formation

viscosity

miscibility

dielectric property

acidic group

9. Higher voltage leads to stretching of the solution due to great _____ forces

electrostatic

Vanderwaal's

magnetic

Coulombic

10. _____ are continuous fibre bundles with the fibres partially oriented

Yarns

thread

matrix

wool

11. In electrospinning use of high _____ leads to lose its functionality

viscosity

temperature

molecular weight

voltage

12. In the field of dentistry _____ NPs used as dental filler.

Silica

Zirconia

Zinc oxide

Titania

13. scaffolds containing ____ MWCNT were examined in vivo in a rat calvarial bone defect model for healing 8mm diameter defects.

0.5%

1.5%

2.5%

3.5%

14. ____ nanoparticles have been incorporated in scaffolds for enhancing osteogenic performance

Silver

Gold

TiO₂

ZnO

15. _____ is osseous conductive, thereby it facilitates bone formation.

Silica

Zirconia

Zinc oxide

Titania

16. The nano sized _____ particles can easily integrate into the dental tubules.

silica

zirconia

hydroxyapatite

titania

17. _____ have been considered as excellent tumor-targeting vehicles.

Phorphyrins

Nanoparticles

Lysosomes

Dyes

18. _____ nanoparticles have been in the bio-imaging spotlight due to their special optical properties.

Gold

Terbium

Silver

Zinc sulphide

19. _____ - can be used to study cellular processes, and monitor or recognize disruption or alterations in the cellular processes of cancer cells.

Biomarkers

Phorphyrins

Lysosomes

Dyes

20. ____ are an exciting material to work with due to their unique optical properties compared to traditional organic fluorescent labels.

Phorphyrins

Quantum dots

gold

Dyes

21. The low photobleaching threshold and broad absorption/emission peak width of ____ have hindered their use in long term imaging

fluorescent dyes

Quantum dots

gold nanoparticles

peptides

22. ____ particles have also been functionalized with QDs for cancer targeting, separation and imaging.

Metal

Magnetic

Semiconductor

Fluorescent

23. A droplet of water on the rough, super-hydrophobic surface of the Lotus leaf will have a contact angle ____

below 260°

below 130°

exceeding 160°

exceeding 290°

24. ____ makes textiles robust, abrasion-proof and long-lasting.

NanoSphere

Nanorods

Nanowires

Nanotubes

25. The fabric treated with _____ nanorods were found to have demonstrated an excellent UV protective factor (UPF) rating

PbO

ZnO

MgO

CuO

26. A thin layer of _____ is formed on the surface of the treated cotton fabric which provides excellent UV protection and the effect can be maintained after 50 home launderings.

silicon dioxide

silver oxide

titanium dioxide

cadmium oxide

27. Fire risk can be substantially reduced by producing percolation networks of _____ in polymers.

Zinc oxide

Carbon nanotubes (CNTs)

titanium dioxide

iron oxide

28. _____ surfaces have attracted much interest because of their potential practical applications such as anti-sticking, anticontamination, and self-cleaning coating.

Super-hydrophobic

Super-hydrophilic

Super-paramagnetic

Super-antiferromagnetic

29. _____ is the most important parameter used to describe flammability and is assumed as the driving force of the fire.

Ignition Time (IT)

Peak Heat Release Rate (PHRR)

Total Heat Release Rate (THRR)

Heating Rate (HR)

30. ____ is the most commonly used clay for Fire-Retardant Mechanism

Sterlite

Carbonite

Bauxite

Montmorillonite

31. The whole surface of the lotus leaf is covered with wax crystals with dimensions of ____.

2-200 nm

100-200 nm

2-200 microns

100-200 microns

32. ____ based fire retardants are gradually being phased out owing to the WEEE and RoHS regulations.

Iodine

Bromine

Chlorine

Fluorine

33. The functionality of the ____ treatment on Super-hydrophobic polymer coatings is said to be stable to 50-80 washing cycles at temperatures up to 75°C

NanoSphere

nanorods

nanowires

nanoclays

34. UV blocking treatment for cotton fabrics are developed using the ____ method

hydrothermal

sol-gel

chemical

citrate

35. _____ free, recyclable, environmentally friendly flame-retardant systems that do not release toxic gases have recently become preferable.

Bromine

Fluorine

Halogen

Iodine

36. _____-based flame retardants show high flame-retardant efficiencies

Clay

Nanofiller

Fluorine

Bromine

37. _____ containing nanocomposites absorb more radiation than polymers during fires; therefore, nanocomposite temperatures increase faster than polymer ones.

Silver

Carbon nanotubes (CNTs)

Titania

Zinc oxide

38. Upconversion materials involves in the process of _____

Produce multiple intermediate states to accommodate low energy excitation photons

Produce multiple intermediate states to accommodate High energy excitation photons

Produce multiple intermediate states to stop the transition between the states

Avoiding hopping mechanisms

39. Upconversion Nanoparticles Consist of Inorganic host and _____ dopant ions embedded in host lattice

Copper

Iron

Platinum

Lanthanide

40. Energy loss of dopant ions arising from _____ in UCNPs.

Grain boundaries

Crystal defects

Reciprocal lattice

Internal Pressure

41. The targeted drug delivery is to deliver drug to _____ and spare the _____

Normal Cells, diseased Cells

diseased Cells, Normal Cells

Normal Cells, Normal Cells

diseased Cells, diseased Cells

42. Normally Amphiphilic molecule having _____ parts

Hydrophilic & Hydrophobic

OH

Acidic

Base

43. UCNPs are gaining lot of attention in biological imaging due to _____ property

Bioresorbable

Bioactive

Reflectance

Autofluorescence

44. UCNPs assist in biological detection through one of mechanism namely _____

Peak Heat Release Rate (PHRR)

Total Heat Release Rate (THRR)

Fluorescence Resonance Energy Transfer (FRET)

Fluorescence Energy Transfer (FET)

45. The colloidal particles are coated with the proteins such as albumin, globulin etc., depending on the nature of the material surface charge & hydrophobicity of the particles.

This is called as _____

Renaissance

Opsonisation

Luminescence

Silanization

46. The antigen associated with tumor cells are called as the _____

Natural Killer cells

Red blood cells

Tumor Marker

None of the above

47. _____ activities, sensor and photocatalytic behavior are the most mentioned purposes of [magnetic nanoparticles](#) incorporation to textiles.

Antiviral

Antifungal

Antistatic

Antibacterial

48. _____ was grafted onto the surface of silica-coated MNPs to obtain magnetically retrievable and deliverable antimicrobial nanoparticles.

Carboxymethyl chitosan (CMCS)

Polyvinyl alcohol (PVA)

Polyamide

Nylon

49. _____ creates challenges for the miniaturization of robots into micro- and nanoscales.

Compact size

Locomotion

Cost

Material

50. _____ radiation has been implicated in three major adverse effects in human beings: sunburn, skin cancer, and immunosuppression.

UVA

UVB

UVC

All above

1. Nanomaterials are considered as unique and important materials due to its _____

e) Bulk properties

b) Size

c) Structure

d) Novel properties and functions

2. ----- are due to emissions caused by the sources such as volcanic emissions, sea-salt emissions, and natural fires.

a) Geogenic emission

b) Anthropogenic emission

c) Moderate toxicity

d) Biogenic emission

3. ----- is responsible for acid rain

A. Atmospheric CO

B. Atmospheric oxygen

C. Oxides of sulphur

D. Atmospheric CO₂

4. ----- causes damages to ozone layer

A. carbon dioxide

B. chlorofluoro carbon

C. carbon monoxide

D. chloroform

5. Nano silicon with diamond can form a composite that is useful as

- A. anode material
- B. light source
- C. **cutting tool**
- D. cathode material

6. Conventional and adaptive nano water purification makes use of

- (a) Na
- (b) Cl
- (c) Fe
- (d) oxygen

Answer: C

7. Nano bio sensors are based on

- A. spectroscopic technique
- B. **assays based on bio receptor molecules**
- C. spectrometry methods
- D. column chromatography

8. Example of nano particle that controls plants diseases

- A. Nano aluminum
- B. **Nano alumino-silicate**
- C. Nano gold
- D. Nano platinum

9. Rose powdery mildew caused by *Sphaerotheca pannosa* Var *rosae* can be controlled by

- A. nano silicon
- B. **nano silver**
- C. nano carbon
- D. graphene

10. The process of maximizing crop yields and minimizing the usage of pesticides, fertilizers, and herbicides through efficient monitoring procedures is referred to

- A. crop control
- B. **as precision farming.**
- C. pest control
- D. weed control

11 .Nature derived polymer that is used in food packaging

- A. polystyrene beads
- B. cyclodextrin
- C. xanthan gum
- D. chitosan**

12. In nano electronics -----

- A. macro properties are important
- B. inter-atomic interactions and quantum mechanical properties play a role
- C. optical properties are dominant
- D. chemical properties will play a major role

Answer: B

13. Carbon nanotubes are preferred in nano electronics in place of silicon due to -----

- a. high tensile strength, non ductility, resistance to heat, chemical inactivity
- b. high tensile strength, ductility, resistance to heat, chemical inactivity
- c. high tensile strength, ductility, thermal conductivity, chemical inactivity
- d. high tensile strength, ductility, resistance to heat, chemical reactivity

Answer: B

14. Autonomous electric power generation and storage can be achieved through

- a. Fossil fuel and grid transport
- b. Solar cells and batteries
- c. Solar cells and fuel cells
- d. Solar cells and hydrogen

Answer: b

15. Electrolyte in fuel cell allow ----- to pass through and ----- flow through external circuit

- a. electrons and ions
- b. ions and electrons
- c. oxygen and protons
- d. hydrogen and hydrogen

Answer: b

16. For a good thermoelectric efficiency,-----

- a. The materials should have high thermal conductivity, low electrical conductivity
- b. The materials should have low thermal conductivity, high electrical conductivity
- c. The materials should have high electrical resistivity, low thermal conductivity
- d. The materials should have high thermal conductivity, high electrical resistivity

17. The fabric treated with _____ nanorods were found to have demonstrated an excellent UV protective factor (UPF) rating

PbO

ZnO

MgO

CuO

18. _____ surfaces have attracted much interest because of their potential practical applications such as anti-sticking, anticontamination, and self-cleaning coating.

Super-hydrophobic

Super-hydrophilic

Super-paramagnetic

Super-antiferromagnetic

19. When was the first biosensor was invented?

A. 1956, Leland Clark.

B. 1962, Clark and Lyon.

C. 1955, Leland Clark.

20. Which technique is used in the making of biochips?

a. Nanolithography.

b. Microlithography.

c. Nanotechnology.

21. The main thrust in nano-technologies applied to textiles, clothing and footwear will be to -----

a. Improve the properties and performance of existing materials

b. Develop regular and ordinary textiles with normal functions

c. Greatly increase the use of fibres in technical textiles, biomedical and healthcare options

d. Open up new opportunities for metals and ceramics

22. The wrinkle recovery of the fabrics can also be improved to a great extent by imparting techniques like ----- and ----- beside the use of nano-materials to the fabrics

Sol gel and solution

washing and ironing

padding and exhaustion

CVD and Sol gel

23. The researchers employed _____ and _____ to improve the wrinkle resistance of cotton and silk respectively

nano-zirconia dioxide, nano-Germanium

nanowire and nanotitanium
nano-titanium dioxide, nano-silica
nanowire and nanorod

24. _____, a natural biopolymer, is effectively used as antibacterial, antifungal, antiviral, non-allergic and biocompatible.

Chitosan

Emulsion
Triclosan
Polyster

25. _____ is a cancer treatment that uses high doses of radiation to kill _____ and shrink tumors

X-ray, pus cells
Radiation, pus cells

Radiation therapy, cancer cells

X-ray, cancer cells

26. The highly-branched nature of _____ provides large surface area to size ratio and allows great reactivity with _____ in vivo.

polymers, diseases
Ceramics, microorganisms

dendrimers, microorganisms

metals, diseases

27. The use of _____ in surgery has provided additional tools for _____ enabling minimally invasive intervention or even long distance tele-operated surgeries.

machines, engineers

metals, engineers

robots, surgeons

polymers, surgeons

28. _____ evolved from the field of biomaterials development and refers to the practice of combining scaffolds, cells, and biologically active molecules into functional tissues.

Biomedical Engineering

Tissue engineering

Bioinformatics

Microbiology

29. _____ is one of the most stable forms of calcium phosphates and is the major inorganic component of human bone and teeth.

Calcium
Phosphorus
Silica
Hydroxyapatite

30. The efficacy of sunscreens is determined by the ability to protect against both _____ radiation and _____ radiation

UVB, UVA
UVC , UVE
UVD, UVS
UVC, UVL