PP SAVANI UNIVERSITY

Fifth Semester of B.Sc. Examination

Dec-Jan-2020-21

SSCH3190– Applied Chemistry-Nanomaterials

06.01.2021, Wednesday | Time: 10:00 AM to 12:30 PM | Maximum Marks: 60

Section-A (Total Marks - 20)

Q.1 Objectives (20 MCQ Compulsory-20 mark each) **(20)**

1 Which property of nanoparticles provides a driving force for diffusion?
- **A** Sintering
- **B** Optical Properties
- **C** High surface area to volume ratio
- **D** There is no such property

2 The modern history of nanotechnology began in
- **A** 1958
- **B** 1959
- **C** 1969
- **D** 1949

3 The size of Nucleus is nearly _____m
- **A** 10^{-14} m
- **B** 10^{-9} nm
- **C** 10^{-15} m
- **D** 10^{-2} nm

4 The width of hair is about
- **A** $\sim 30\mu m$
- **B** $\sim 300\mu m$
- **C** $\sim 3\mu m$
- **D** $\sim 0.30\mu m$

5 Which is still one of the most promising areas of nanotechnology
- **A** Carbon
- **B** Carbon nanotubes
- **C** Nanotubes
- **D** Hydrogen nanotubes

6 Quantum dots (QDs) are man-made nanoscale crystals that that can transport
- **A** positrons
- **B** neutrons
- **C** protons
- **D** electrons

7 Which are man-made nanoscale crystals
- **A** Quantum dots
- **B** Quantum wire
- **C** Nanowire
- **D** Nano dots

8 Which is not application of Nanomaterials
- **A** micro and nanoinstruments
- **B** nanoelectronics
- **C** Nanoengineered materials
- **D** Nano Bio diesel

9 The _____of materials' dimension has pronounced effects on the optical properties.
- **A** Oxidation
- **B** Reduction
- **C** Protonation
- **D** Halogenation

10 Nanoscale structures such as nanoparticles and nanolayers have very _____surface area to volume ratios
- **A** Low
- **B** Limited
- **C** High
- **D** small

11 Zero dimensional materials are can be
- **A** amorphous
- **B** Crystalline
- **C** Both A and B
- **D** None of this

12 Which is a unique filtration process in between UF and RO
- **A** Nanofiltartion
- **B** Monofiltartion
- **C** Filtration
- **D** Aquafiltartion

13 Which nanomaterials exhibit plate-like shapes
- **A** Zero dimensional materials
- **B** One dimensional materials
- **C** Two dimensional materials
- **D** Three dimensional materials

14 NFX is the environmentally conscious choice in removal from seawater.
- **A** Hardness
- **B** Softness
- **C** Colour
- **D** Stiffness

15 Colloidal solutions of spherical gold nanoparticles exhibit a deep which color due to surface plasmon absorption
- **A** Black
- **B** White
- **C** Red
- **D** Blue

16 Which is not Application of nano membrane?
- **A** Surface & Groundwater Treatment
- **B** Oil Removal in Wastewater
- **C** Seawater Desalination
- **D** Drug Industry

17 The bulk solid form of pure or mixed fullerenes is called
- **A** fulerite
- **B** fullerite
- **C** fullarite
- **D** fullerate

18 Which is a flat mesh of regular hexagonal rings?
- **A** Buckyball
- **B** Bucky tube
- **C** Graphite
- **D** Graphene

19 Which is the Magnetic nanocrystals Application
- **A** Ferro fluids
- **B** Ferric Acid
- **C** Ferro composite
- **D** Ferro resistant

20 A nanomedicine is

A A large number of studies nano materials to different medicine areas
B A large number of studies nano materials to different polymer areas
C A large number of studies nano materials to different chemical areas
D A large number of studies nano materials to different pesticides areas

Section-B (Total Marks - 40)

Q.1 Short Notes (attempt all four compulsory- 3 marks each) (12)

A Semiconductors
B Composite Materials
C Carbon Nano Tube (CNT)
D Fullerenes

Q.2 Explain in detail (attempt any four -7 marks each) (28)

A Explain different Types of Nano structures
B Explain **a)**Surface plasmon resonance **b)** High Energy Ball Milling
C Explain Applications of Nanoparticles **a)** Nano Membrane **b)** Biological
D Explain Applications of Nanoparticles **a)** Environmental **b)** Photovoltaic Solar cells
E What is Nano Technology? Explain Mechanical Property