

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022  
(Third Semester)

Branch – BIOTECHNOLOGY

NANO BIOTECHNOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 How big is a nanometer?  
(i) One billionth of a meter      (ii) One millionth of a meter  
(iii) Ten square of a million      (iv) Micrometer
- 2 Nano-engineered \_\_\_\_\_ is the most common material used in the nano products.  
(i) silver      (ii) carbon  
(iii) gold      (iv) silica
- 3 Which of these is at the nanoscale?  
(i) DNA      (ii) A hydrogen atom  
(iii) A Red blood cell      (iv) A snow flake
- 4 In cancer research, colloidal gold can be used to target \_\_\_\_\_.  
(i) tumor cells      (ii) cancer cells  
(iii) normal cells      (iv) both tumor and cancer cells
- 5 Which of the following is the application of nanotechnology?  
(i) biotechnology      (ii) food science and technology  
(iii) medicine      (iv) all of the above

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Write short notes on fullerene.  
OR  
b Analyze the applications of Scanning Tunneling Microscopy.
- 7 a Discuss the features of nano composite materials.  
OR  
b Justify the application of DNA biochip.
- 8 a Categorize the topographic properties of proteins.  
OR  
b Write short notes on DNA profiling.
- 9 a Outline the principles of immunoassay.  
OR  
b Analyze the applications of nanotechnology in targeted drug delivery.

Cont...

- 10 a Discuss the application of nano finishing in textile industry.  
OR  
b Differentiate MEMS from NEMS.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Enumerate the principle and working of SEM.  
OR  
b Add a detailed note on top down and bottom up approach.
- 12 a Discuss in detail about the biologically synthesized nanostructures with suitable example.  
OR  
b Explain the process of protein based nanostructure formation.
- 13 a Outline the concept of bioelectronic sensors and its applications.  
OR  
b Analyze the principle and application of nanobot medical devices.
- 14 a Sketch the idea of bio-barcode assay in detail.  
OR  
b Review the application of nanotechnology in medical science.
- 15 a Illustrate how the process of electrospinning used for tissue engineering.  
OR  
b Justify the role of nanotechnology in the reduction of energy consumption.

Z-Z-Z

END