

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- MARCH-2023

Course Code (Credits): 20MSWBT231 (2)

Max. Marks: 15

Course Name: NanoBiotechnology

Course Instructors: Dr.Abhishek

Max. Time: 1 Hour

---

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

---

1. A plant virus was examined by electron microscope and was found to consist of uniform spherical protein capsid  $150 \text{ \AA}$  in diameter and the volume of capsid is  $0.75 \text{ nm}^3$ . if the volume of single protein is  $0.25 \text{ nm}^3$  then what would be the number of protein in virus capsid. [3]
2. A student would like to disinfectant the immunology laboratory area using commercially available disinfectant if the area of the laboratory is  $7500 \text{ m}^2$  and he would like to maintain the thickness of disinfectant  $10 \text{ nm}$  then how much disinfectant he required (in ml)? [3]
3. Nanoscience is the study of materials that exhibit remarkable properties, functionality and phenomena due to the influence of small dimensions. List out the detail unique properties of material at nanoscale and possible applications in various industrial sectors. [4]
4. Although nanotechnology is a fairly new science, the chief concepts have been developing over the course of fifty years but the modern history of metal nanoparticles is said to be started with the synthesis of gold colloid By Michal Faraday in 1857. Detail out the synthesis mechanism of colloidal gold nanoparticles used by Faraday [3]
5. Nanomaterials which refers to nano-sized particles or materials that belong naturally to the environment or that are produced by human activity without intention. These non-intentionally-made nanomaterials are good for mankind or harmful. Justify your answer with suitable example. [2]