

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEB-2024

Course Code(Credits): 18B1WBT633 (3)

Max. Marks: 15

Course Name: Nano-Biotechnology

Course Instructors:Dr. Abhishek

Max. Time: 1 Hour

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

1. Nanoparticles are typically synthesized from a top-down or bottom-up approach. The exact synthesis method depends on the material being generated, some common methods include the Chemical reduction method, biological methods and physical methods. Using Hydrogen Tetrachloroaurate (III) as a substrate, detail out the synthesis mechanism of colloidal gold nanoparticles through chemical reduction methods in **Biphasic and Monophasic** System. [5] [CO-2]
2. Direct ELISA is a simple, quick, and reproducible method for determining the concentration of a unknown antigen in a sample mixture using antigen antibody interaction. If the required concentration of antibody in ELISA assay is 1.0 nM then how would you prepare exactly 250ml of 1.0 nM antibody solution from a 10.0 mM and 100 μ M antibodies stock solutions? [5] [CO-1]
3. Nanoscience is the study of structures and materials on an ultra-small scale (molecular, atomic, or even subatomic scale) and has the potential to revolutionise a diverse range of fields, from health care to manufacturing. Discuss the different properties of material at this subatomic scale and possible applications of nanomaterial in various industrial sectors. [4] [CO-1]
4. Nanoparticles and structures have been used by humans in fourth century AD, by the Roman, which demonstrated one of the most interesting examples of nanotechnology in the ancient world. Detail out two example of ancient nanotechnology [1] [CO-1]