

## JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

## TEST -3 EXAMINATION- May 2018

## B.Tech VIII Semester

COURSE CODE: L-11B1WBT840

MAX. MARKS: 35

COURSE NAME: Nano-Biotechnology

COURSE CREDITS: 3

MAX. TIME: 2 Hr

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. XXXXXXXXXXXXXXXXXXXXXXXX*

- Q.1a** Why TMS (Trimethyl silane) is used as standard in NMR spectroscopy
- Q.1b** What would be the chemical shift of a peak that occurs 655.2 Hz downfield of TMS on a spectrum recorded using a 90 MHz spectrometer? (1+3+3)  
CO-3
- Q.1c** At what frequency would the chemical shift of chloroform ( $\text{CHCl}_3$ ,  $\delta = 7.28$  ppm) occur relative to TMS on a spectrum recorded on a 300 MHz spectrometer?
- Q.2 a** Diagrammatically illustrate the working principle of electron microscope and comment on its applications (3+2)  
CO-3
- Q.2b** What is "the essential" difference between the lenses in a light microscope and a TEM as far as magnification is concerned
- Q.3** Describe the main components of biosensors and proposed a concept for colorimetric detection of glucose in human urine (5)  
CO-5
- Q.4** Write a note on targeted drug delivery system and properties of an ideal drug carrier (5)  
CO-4
- Q.5** Diagrammatically explain the following (a) solvent effect (b) red edge excitation spectra (2.5+2.5)  
CO-4
- Q.6** Write down the third and fourth postulate of quantum mechanics (2)  
CO-1
- Q.7** Explain top down and bottom-up approach of nanoparticles synthesis. (3)  
CO-2
- Q.8** What is a nanomaterial? Write down the application of nanomaterial in biomedical sciences (1+2)  
CO-2