

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- Feb 2020

B.Tech II Semester

COURSE CODE: 18B11PH212/10 B11PH212

MAX. MARKS: 15

COURSE NAME: Bioinstrumentation Techniques/Biophysical Techniques

COURSE CREDITS: 04

MAX. TIME: One Hour

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

**Q1.** Find the packing fraction of a FCC crystal with two corner atoms (situated diagonally) missing from the unit cell. [CO-1]

**Q2.** State the limitation in classical physics while predicting emission or absorption at all energies in an atom. [CO-2]

**Q3.** Find the Miller indices of a set of parallel planes which makes intercepts in the ratio  $4a:3b$  on the x- and y-axis and is parallel to z-axis. 'a', 'b', and 'c' are the primitive vectors of the lattice. [CO-2]

**Q4.** Monochromatic x-rays of wavelength  $1.5 \text{ \AA}$  are incident on a crystal face having an interplanar spacing of  $1.5 \text{ \AA}$ . Find the various orders in which Bragg's reflection takes place. [CO-2]

**Q5.** State the basic difference between BSE and SE in ordinary scanning electron microscopy. [CO-3]

**Q6.** What are the limitations of ESEM over ordinary SEM. [CO-3]