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Test -2 EXAMINATIONS, APRIL 2018

B.Tech (BT) –IVth Semester

COURSE NAME: Biophysical Techniques MAX.MARKS:25

COURSE CODE:10B11PH212 MAX.TIME: 1.5 hrs

Note: Carrying of mobile phones during examinations will be treated as a case of unfair means.

Q1.[4 marks] Data of two samples of Aluminium is given which are processed at different parameters. Find out the particle size and strain induced in the sample.

Annealed Al

Peak No.	2 θ (^{0})	(hkl)	B_i=FWHM (^{0})
1	38.52	111	0.203
2	44.76	200	0.166
3	65.13	220	0.189

Cold worked Al

Peak No.	2 θ (^{0})	(hkl)	B_i=FWHM (^{0})
1	38.52	111	0.287
2	44.76	200	0.306
3	65.13	220	0.371

Q2. (a)[2 Marks] Discuss the conditions for electron-beam sample interaction in SEM.

(b)[1.5 marks] Discuss the factors affecting secondary electron emission in SEM.

Q3. (a)[1.5 marks] In a sample with an absorbance of 0.75 at a specific wavelength, what is the relative amount of light that was absorbed by the sample?

(b)[1.5 marks] How to explain about the possible transitions in UV-Vis spectroscopy?

(c)[1.5 marks] Which main types of effects substituents have on chromophores in UV-Vis spectroscopy?

Q4. (a)[2.5 marks] Discuss basic concepts and working of FRET with any one real example and its applications?

(b)[2 marks] What is stokes shift, mirror image rule and method to measure quantum yield in photoluminescence spectroscopy.

Q5. (a)[2.5 marks] What are the basic principles of CD spectroscopy discuss in detail?

(b)[2.5 marks] Draw CD signature spectra for alpha helix, beta sheets, beta turns and random (disorders) protein structures.

Q6.[3.5 marks] How SPR works explain the phenomenon in detail along with the advantages and applications of method in biology.