NATIONAL INSTITUTE OF TECHNOLOGY, ROURKELA
MID-SEMESTER EXAMINATION, 2020
SESSION: 2019-2020 (Spring)
B. Tech. 6th Semester

Subject Code: BM3002	Subject name: Analytical Techniques in Biotechnology	Deptt. Code: BM
Number of Pages:1	Full Marks: 30	Duration: 2 hrs

Instructions: Answer any five questions. All parts of one question should be at one place.

Q. No	Particulars	Marks
1	(i) Discuss the density gradient centrifugation. (ii) What is the basic principle of centrifugation? What are the different types of rotors used in centrifuge? Describe them. (iii) What are numerical aperture and magnifications in compound microscope?	2+3+1=6
2	(i) What different type of illuminations are used in light microscope? Describe them (ii) Describe principle, parts, working and applications of a phase contrast microscope. (iii) What are partition coefficient and effective distribution coefficient?	2+3+1=6
3	(i) What is the principle of TLC? What are common problems faced during TLC chromatography and how it is solved? (ii) How resolution of column chromatography is influenced by selectivity and retention factor?	2+3+1=6
4	(i) What is theoretical plate in column chromatography? How plate height are calculated in column chromatography? (ii) What are the reasons for peak broadening in column chromatography? (iii) How many type of ion exchangers are there? Give examples.	2+3+1=6
5	(i) What detectors are used in HPLC system? Describe them.	6
6	(i) What is reverse phase and normal phase chromatography? Give examples. (ii) What are the criteria for selecting ion exchange chromatography matrices for separating proteins? (iii) What are the applications of molecular size exclusion chromatography?	2+2+2=6