BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BE **SEMESTER : VI**
BRANCH: BIOTECH **SESSION : SP/19**

SUBJECT: BT6021 BIOSEPARATION ENGINEERING

TIME: 3.00 Hrs. **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Define the particulate matters present in production medium?	[2]
Q.1(b)	Explain the role of coagulation and flocculation in separation process	[4]
Q.1(c)	Mention the factors responsible for filtration and derive the equation for constant volume filtration process?	[6]
Q.2(a)	Explain the characteristic of compressible filter cake?	[2]
Q.2(b)	Reveal the process of cell wall permeabilization?	[4]
Q.2(c)	Find out applied centrifugal field at a point in a sample which is 10cm far from the axis of rotation and with an angular velocity of 6000 rad/sec?	[6]
Q.3(a)	Explain the significance of cell wall components in the process of lysis?	[2]
Q.3(b)	Derive the equation for Langmuir adsorption isotherm?	[4]
Q.3(c)	Explain the process of extraction by ATPS with a suitable example?	[6]
Q.4(a)	Define the significance of electro-dialysis in purification process?	[2]
Q.4(b)	Analyze the types of membrane based processing systems with examples?	[4]
Q.4(c)	Mention the principle of reverse osmosis? Discuss about relationship between osmotic pressure and solute concentration?	[6]
Q.5(a)	Explain the significance of microfiltation?	[2]
Q.5(b)	Evaluate the role of ion exchangers in ion exchange chromatography?	[4]
Q.5(c)	Analyze the role of stationary phase and adsorbate in adsorption chromatography?	[6]
Q.6(a)	Comments on the significance of partitioning coefficient?	[2]
Q.6(b)	Provide the salient features related with small scale to large scale chromatographic purification?	[4]
Q.6(c)	State the various components and related functioning of HPLC?	[6]
Q.7(a)	Discuss various interactions in affinity chromatography?	[2]
Q.7(b)	Define the process of drying and dehydration?	[4]
Q.7(c)	Illustrate the process of nucleation and crystal growth?	[6]

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