Type: DES

Q1. List out the factors (5 each) that contribute to protein precipitation in the below given table (5)

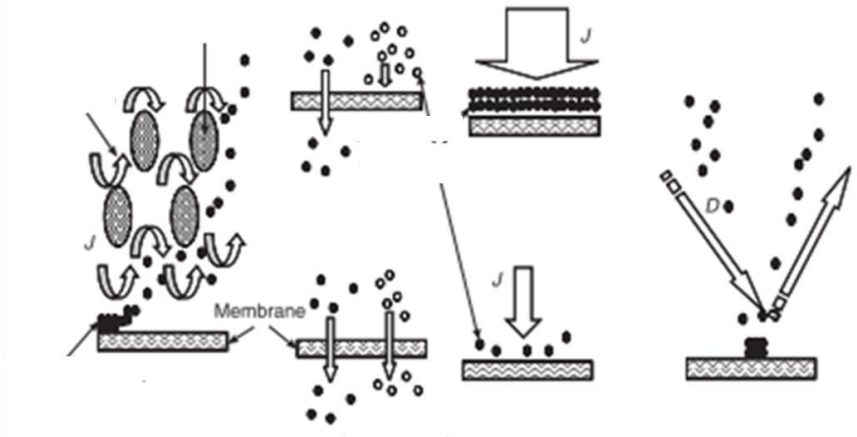
S. No	Protein characteristics	Solution properties
1.		
2.		
3.		
4.		
5.		

Q2. While studying protein precipitation, Aadya increased the concentration of a protein beyond its solubility limit (unknowingly). What would be the consequences? (3)

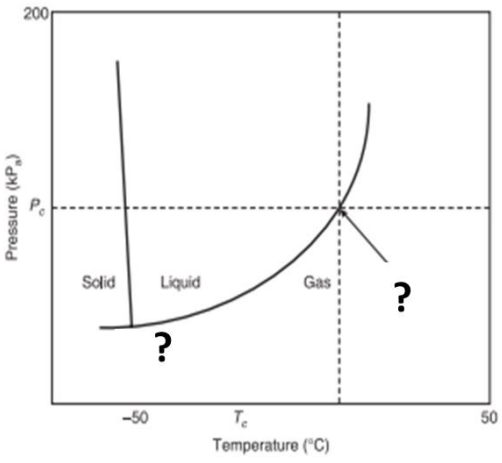
Q3. Molecular or conformational changes on protein can enhance their insolubility of protein. What is the major disadvantage of this approach (2)

Q4. Sudesh is interested in performing clarification of fermentation broth. Describe the methodology involved using a flowchart (4)

Q5. In the below given figure, mention the different mechanisms involved in membrane filtration (4)



Q6. Label the regions in the below given figure and in which downstream technique this is applicable (2)



Q7. Neel interested in isolating an endoenzyme for developing therapeutic proteins. Detail the steps involved using a flow chart (4)

Q8. Praveen utilized a tubular bowl centrifuge with an internal diameter and length of 15 cm and 80 cm respectively to concentrate/isolate fungal cells. Calculate the settling velocity of the cells at a speed of 18,000 rpm in centrifuge with the volumetric capacity of 250 litres per hour. (3)

Q9. Discuss the approaches to enhance efficiency of filtration (3)

Q10. Mention the disadvantages of mechanical cell disruption techniques (4)

Q11. Using top-down approach, arrange the following bioproducts in terms-of their densities: Proteins, DNA, Mammalian cells, Microbial cells, RNA and Organelles (3)

Q12. Explain the working principle of Reverse Micellar Extraction with their advantages (3)

Q13. Rishabh is interested in leveraging downstream techniques in dairy industry for processing cheese. He wanted to utilize the same method in two stages (1. Separating whey protein from the lactose and salts and 2. to isolate and concentrate lactose with help of another downstream technique). Discuss the possible techniques (5)

Q14. Discuss the working principle of ultrasonication based cell disruption with their advantages and disadvantages (3)

Q15. In the below given figure, fill in the required pressure and particles/solutes size retained in membrane-based filtration (2)