Assignment 5

The due date for submitting this assignment has passed. Due on 2019-03-06, 23:59 IST
As per our records you have not submitted this assignment.

1) A particular protein can be separated from other contaminating proteins by
   a. mass spectrometry
   b. fractional distillation
   c. chromatographic techniques
   d. all of these

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   c.

2) During gel filtration chromatography, separation occurs on the basis of
   a. charge of the protein
   b. pl of the protein
   c. shape and charge of the protein
   d. shape and molecular weight of the protein

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   d.

3) The matrix used for gel filtration chromatography varies according to their
   a. pore size
   b. molecular weight
   c. charge
   d. functional group attached to the matrix

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   a.
4) In case of thin-layer chromatography (TLC) the stationary phase is usually
   a. Cellulose
   b. silica
   c. agarose
   d. all of the above

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   a.
   b.
   c.
   d.

5) Void volume in a gel chromatography column refers to the
   a. space within the matrix pore
   b. volume of the column
   c. volume of the column which is unoccupied by the matrix granules
   d. volume of the protein added to the column

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   a.
   b.
   c.
   d.

6) Three different proteins are to be separated for analysis. The characteristics of the proteins given below. Which of the following would result in best separation of these proteins in order to get them in pure form?

<table>
<thead>
<tr>
<th>Protein</th>
<th>Molecular weight (in kDa)</th>
<th>pI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>13.3</td>
<td>9.0</td>
</tr>
<tr>
<td>B</td>
<td>27.5</td>
<td>8.7</td>
</tr>
<tr>
<td>C</td>
<td>63.4</td>
<td>9.5</td>
</tr>
</tbody>
</table>

   a. Paper chromatography
   b. Gel filtration chromatography
   c. SDS PAGE followed by ion exchange chromatography
   d. Ion exchange chromatography followed by gel filtration

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   a.
   b.
   c.
7) Affinity chromatography deals with the:

a. specific binding of a protein with another molecule
b. protein-DNA interaction
c. protein-carbohydrate interaction
d. charge on the protein

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

8) Once a protein comes out of the gel filtration column, it is usually monitored using

a. pH paper
b. pH meter to analyze the change in pH of the medium
c. UV spectrophotometer for studying the absorbance
d. Viscometer

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

9) Carboxymethyl (CM) matrix and diethylaminoethyl (DEAE) matrix are generally considered as

a. Cation exchange matrix
b. Cation and anion exchange matrix, respectively
c. Anion exchange matrix
d. Anion and cation exchange matrix, respectively

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

10)
Before loading the protein onto the chromatography column, the following treatment is made to the column:

a. it is equilibrated with the protein which is to be isolated
b. it is washed with ethanol to remove the impurities
c. it is equilibrated with buffer which will be used as mobile phase
d. it is washed with the matrix solvent

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

11) A sample contains a mixture of proteins from which the protein "X" is to be isolated. Which method will be used for accurate isolation?

<table>
<thead>
<tr>
<th>Protein</th>
<th>Molecular weight (in kDa)</th>
<th>pI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>15.1</td>
<td>3.0</td>
</tr>
<tr>
<td>B</td>
<td>25.7</td>
<td>8.7</td>
</tr>
<tr>
<td>C</td>
<td>24.2</td>
<td>7.4</td>
</tr>
<tr>
<td>X</td>
<td>23.8</td>
<td>4.3</td>
</tr>
</tbody>
</table>

a. ion exchange chromatography only
b. ion exchange followed by gel filtration chromatography
c. affinity chromatography followed by ion exchange chromatography
d. gel filtration chromatography only

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

12) Your protein of interest contains a 6x His-tag, and is over-expressed in bacterial culture. After purifying by Ni-NTA affinity chromatography, you run the eluted fractions through reducing SDS-PAGE to confirm its presence and purity. However, you observed in addition to your protein of interest an additional band. Which of the following is a possible explanation for this?

a. The His tag got cleaved
b. The protein does not contain a tag
c. In addition to your protein, some bacterial protein also contains tandem repeat of histidine residues.
d. The protein is multimeric
13) Why is it advisable to degas the mobile phase in case of Gel filtration?
   a. Under high pressure air trapped in mobile phase are removed, which would otherwise hinder the flow of the mobile phase through the matrix
   b. Degassing makes the sample stable in the mobile phase
   c. Degassing removes contaminant from the buffer
   d. All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

14) In FPLC system, usually the flow rate is maintained at 2-5ml/min. Increasing the flow rate beyond the limit can cause
   a. Damage to the proteins
   b. Heat up the column
   c. Column breakage
   d. All the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

15) When not in use, the gel filtration column as well as all the tubes in a FPLC system should be stored in
   a. 70% ethanol
   b. 20% ethanol
   c. Deionized water
   d. 0.02M HCl

No, the answer is incorrect.
Score: 0
Accepted Answers:

b.