Unit 9 - Week 7

Assignment 7

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-03-20, 23:59 IST.

1) Which of the following factors influence bacterial growth in a growth media?
   a. Temperature
   b. Nutrients
   c. pH
   d. All of the above

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

2) Lysogeny broth does not contain:
   a. Tryptone
   b. NaCl
   c. Yeast extract
   d. Agar

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

3) Which of the following elements is a micronutrient for bacterial growth?
   a. C
   b. N
   c. S
   d. Fe

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: d.
4) In order to lyse cells, sonication is used. This process breaks apart the cells by
   a. light energy
   b. heat energy
   c. sound energy
   d. all of the above

   ☐ a.
   ☐ b.
   ☐ c.
   ☐ d.

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

5) A protein will be positively charged when
   a. pH<pl
   b. pH>pl
   c. pH=pl
   d. does not depend on pl

   ☐ a.
   ☐ b.
   ☐ c.
   ☐ d.

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

6) In size exclusion chromatography, proteins are separated based upon their
   a. surface charge
   b. size and shape
   c. affinity
   d. all the above

   ☐ a.
   ☐ b.
   ☐ c.
   ☐ d.

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

7)
A mixture of three proteins of sizes 50kDa, 30kDa, and 12kDa are separated by size exclusion chromatography. What is the order in which they will be eluted out?

a. 50kDa followed by 30kDa and finally 12kDa
b. All of them will come out together
c. 12kDa followed by 30kDa and finally 50kDa
d. 30kDa followed by 12kDa and finally 50kDa

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

8) Imidazole can bind to

a. Ni²⁺
b. Fe³⁺
c. Mg²⁺
d. Na⁺

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

9) You have expressed protein in bacteria and lysed the cells. How will you check if your protein of interest is present in the cell lysate?

a. Analyze the lysate by dynamic light scattering.
b. Analyze the lysate by SDS-PAGE.
c. Analyze the lysate by measuring absorbance at 280nm.
d. Analyze the lysate by circular dichroism.

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

10) Your protein of interest is 90 amino acids long. What will be its approximate molecular weight?

a. 8.1 kDa
b. 9 kDa
c. 9.9 kDa
d. 10.8 kDa
11) Proteins absorb at 280nm due to the presence of which amino acid?  
   a. Serine  
   b. Tyrosine  
   c. Tryptophan  
   d. Histidine

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

12) At 280nm a protein solution has an absorbance of $A_{280} = 9.0$ and the molar extinction coeffi 
    cient of the protein is $\varepsilon_{280} = 11460 \text{ M}^{-1} \text{ cm}^{-1}$. What is the concentration of this protein? 
   a. 0.00079 mM  
   b. 0.79 mM  
   c. 9 mM  
   d. 1273.3 mM

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

13) For the salting out of proteins which of the following salts is commonly used?  
   a. Sodium chloride  
   b. Calcium chloride  
   c. Ammonium sulphate  
   d. Magnesium chloride

   No, the answer is incorrect.
To determine the size of a protein which of the following techniques can be used

- a. Size exclusion chromatography
- b. SDS-PAGE
- c. Analytical ultracentrifuge
- d. Any of the above

No, the answer is incorrect.

A protein sequence is given above. Mention which of the following statements for the above protein is TRUE.

- a. Molecular weight of the protein is 10.5 kDa.
- b. The pI of the protein is 10.
- c. Extinction coefficient at 280 nm is 22.46 mM⁻¹ cm⁻¹
- d. It will have maximum solubility in a buffer with pH 10.

No, the answer is incorrect.

The protein in the previous question is in a buffer of pH 8. It can be purified by

- a. size exclusion chromatography.
- b. cation exchange chromatography.
- c. anion exchange chromatography.
- d. affinity chromatography using Ni²⁺ column.

No, the answer is incorrect.
17) Which of the following techniques is best suited for estimating the overall type of secondary structure in a protein?

a. Circular dichroism
b. SDS-PAGE
c. Gel filtration
d. Dynamic light scattering

No, the answer is incorrect.
Score: 0

18) The three-dimensional structure of a protein can be determined by

a. NMR spectroscopy
b. X-ray Crystallography
c. Circular Dichroism
d. Size exclusion chromatography

No, the answer is incorrect.
Score: 0

19) Particle size and sample homogeneity can be determined by

a. Dynamic light scattering (DLS)
b. SDS-PAGE
c. Analytical ultracentrifuge (AUC)
d. Size exclusion chromatography

No, the answer is incorrect.
Score: 0

20) 

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A protein, without any affinity tag, is being purified from sonicated crude lysate. Which of the following is the best purification sequence?

a. Ni²⁺ column, SEC.
b. SEC, ion exchange, salting out.
c. Ion exchange, Ni²⁺ column, SEC.
d. Salting out, ion exchange, SEC.

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