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## Unit 8 - Week 6

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### Course outline

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Week 6

● Lecture 27 : Gel Electrophoresis of DNA and Proteins - Part I

● Lecture 28 : Gel Electrophoresis of DNA and Proteins - Part II

● Lecture 29 : Gel Electrophoresis of DNA and Proteins - Part III

## Assignment 6

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-03-13, 23:59 IST.**

1) In gel electrophoresis, the gel acts as **1 point**

- a. molecular glue
- b. molecular copy machine
- c. molecular sieve
- d. molecular scissor

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*c. molecular sieve*

2) Which is a suitable technique for separating large DNA fragments? **1 point**

- a. Agarose Gel Electrophoresis
- b. SDS-Poly Acrylamide Gel Electrophoresis
- c. Native Poly Acrylamide Gel Electrophoresis
- d. All of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*a. Agarose Gel Electrophoresis*

3) Which of the following can be determined using SDS-PAGE? **1 point**

- a. Molecular weight of a protein.
- b. pI of a protein.
- c. Presence of disulfide bonds in a protein.
- d. Dissociation constant of a protein-ligand complex.

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Solution	

- a. It acts as a reducing agent.
- b. It imparts uniform negative charge to the proteins.
- c. It controls the pore size of the gel matrix.
- d. It determines the pH of the gel.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*b. It imparts uniform negative charge to the proteins.*

5) Agarose is:

- a. protein
- b. polysaccharide
- c. DNA
- d. lipid

No, the answer is incorrect.

Score: 0

Accepted Answers:

*b. polysaccharide*

6) Migration of a protein in SDS-PAGE is determined by:

- a. charge of the protein.
- b. size of the protein.
- c. shape of the protein.
- d. pI of the protein.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*b. size of the protein.*

7) The main advantage of using separate gels for stacking and resolving in SDS-PAGE is:

- a. to increase the resolution of the separation.
- b. to increase the migration rate.
- c. to maintain the charge of the proteins.
- d. to retain the shape of the protein.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*a. to increase the resolution of the separation.*

8) The role of APS in SDS-PAGE or native PAGE is:

- a. to catalyze polymerization of acrylamide.
- b. to cross-link acrylamide and bis-acrylamide.
- c. to provide free radicals for cross-linking reactions.
- d. to maintain the pH of the gel.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*c. to provide free radicals for cross-linking reactions.*

9) In SDS-PAGE, the major ions present in the buffer are:

1 point

- a. Tris
- b. Glycine
- c. Chloride
- d. All of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*d. All of the above*

10)  $\beta$ -mercaptoethanol (BME) is used in SDS-PAGE to

1 point

- a. break hydrogen bonds and unfold a protein.
- b. break disulphide bonds.
- c. break the peptide bonds.
- d. break multimeric proteins into monomers.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*b. break disulphide bonds.*

11) A non-essential component of SDS-PAGE is

1 point

- a. acrylamide
- b. tetramethylethylenediamine
- c. ammonium persulfate
- d.  $\beta$ -mercaptoethanol

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*d.  $\beta$ -mercaptoethanol*

12) To visualize the proteins in gel, which of the following staining method is used:

1 point

- a. Coomassie brilliant blue staining
- b. EtBr staining
- c. Gram staining
- d. Silver staining

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*a. Coomassie brilliant blue staining*

*d. Silver staining*

13) In native PAGE the proteins separate depending on their:

1 point

- a. size
- b. charge
- c. pI
- d. all of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

d. all of the above

14) The pore size of a polyacrylamide gel can be changed by

1 point

- a. changing the acrylamide concentration.
- b. changing the bis-acrylamide concentration.
- c. changing the ratio of acrylamide and bis-acrylamide.
- d. all of the above.



No, the answer is incorrect.

Score: 0

Accepted Answers:

d. all of the above.

15) In electrophoresis, DNA will migrate towards

1 point

- a. anode
- b. cathode
- c. depends on the DNA sequence
- d. depends on the DNA length

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. anode

16) To reduce the pore size of agarose gel one needs to:

1 point

- a. increase agarose percentage
- b. decrease agarose percentage
- c. increase salt content
- d. change the pH of the buffer

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. increase agarose percentage

17) To visualize DNA in gel, a common dye is

1 point

- a. Coomassie brilliant blue
- b. Ethidium Bromide
- c. Bromophenol blue
- d. All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

b. Ethidium Bromide

18) In agarose gel, the migration of DNA depends on:

1 point

- a. Shape
- b. Size

- c. Net charge
- d. Agarose concentration in the gel.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- a. Shape
- b. Size

19) Which of the following statements is TRUE?

**1 point**

- a. In SDS-PAGE, all proteins are negatively charged.
- b. In native PAGE, proteins can be negatively charged, positively charged or neutral.
- c. In agarose gel, nucleic acids are positively charged.
- d. No denaturing agent is added in agarose gel electrophoresis.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- a. In SDS-PAGE, all proteins are negatively charged.
- b. In native PAGE, proteins can be negatively charged, positively charged or neutral.
- d. No denaturing agent is added in agarose gel electrophoresis.

20) Which of the following statements is TRUE?

**1 point**

- a. A polyacrylamide gel can be depolymerized by heating.
- b. An agarose gel can be depolymerized by heating.
- c. In the absence of bis-acrylamide, acrylamide forms a linear polymer.
- d. It is easier to control pore size in polyacrylamide gels than agarose gels.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- b. An agarose gel can be depolymerized by heating.
- c. In the absence of bis-acrylamide, acrylamide forms a linear polymer.
- d. It is easier to control pore size in polyacrylamide gels than agarose gels.

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