

Unit 6 - Week 4 : DNA Replication, Polymerases, DNA Sequencing and PCR

Course outline

How does an NPTEL online course work?

Week 0: Prerequisite

Week 1: Nucleic acids and proteins

Week 2: Nucleic acids and proteins

Week 3 : Synthesis of Nucleobases and Nucleotides

Week 4 : DNA Replication, Polymerases, DNA Sequencing and PCR

Lec 10: Chemistry and Biology of DNA Replication

Lec 11: Chemistry of Polymerase Chain Reaction

Lec 12: Major components and steps involved in Polymerase chain reaction

Lec 13: DNA sequencing: Sanger's di-deoxy method

Quiz : Assignment 4

Lecture notes: Week 4

Weekly feedback form for week 4

Solution for Assignment "4"

Week 5 : DNA Replication, Polymerases, DNA Sequencing and PCR

Week 6: DNA damage, mutation and cancer

Week 7: DNA to proteins: transcription, translation and genetic code`

Week 8: Protein Sequencing and Solid Phase Peptide Synthesis (SPPS)

Week 9: Chemical Synthesis of Peptides and its therapeutic applications; Spectroscopic techniques for biomolecules.

Week 10: Modern techniques for biomolecules study, purification and characterization; Molecular probes

Week 11: Molecular probes and Chemistry of carbohydrates

Week 12: Chemistry of carbohydrates and Recap

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Assignment 4

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

Due on 2020-02-26, 23:59 IST.

1) DNA polymerase _____ is responsible for the synthesis of lagging strand at the time of DNA synthesis.

1 point

- a (alpha)
 b (beta)
 c (epsilon)
 d (delta)

No, the answer is incorrect.
Score: 0

Accepted Answers:
e (epsilon)

2) Which one among the following enzymes is responsible for unwinding the DNA and formation of replication fork?

1 point

- SSB
 Helicase
 Ligase
 Primase

No, the answer is incorrect.
Score: 0

Accepted Answers:
Helicase

3) _____ is a highly heat stable DNA polymerase, used in PCR amplification.

1 point

- DNA polymerase d
 Taq polymerase
 Topoisomerase I

No, the answer is incorrect.
Score: 0

Accepted Answers:
Taq polymerase

4) Which of the following combinations depicts all the major components of PCR experiment correctly?

1 point

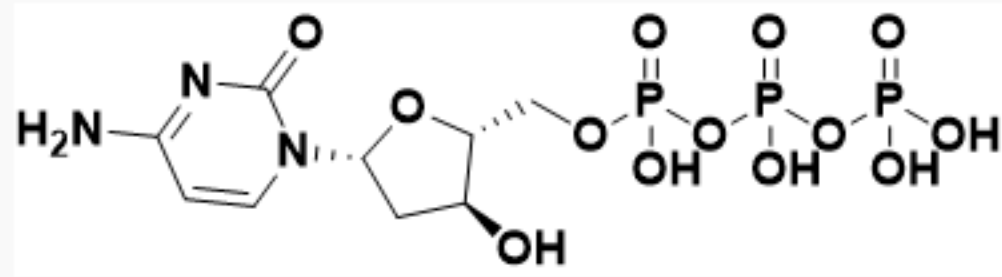
- Template, Taq polymerase, primers, NTPs, CaCl₂ buffer
 Template, Taq polymerase, primers, NTPs, MgCl₂ buffer.
 Template, Taq polymerase, primers, dNTPs, MgCl₂ buffer.
 Template, polymerase I, primers, dNTPs, MgCl₂ buffer.DNA

No, the answer is incorrect.
Score: 0

Accepted Answers:
Template, Taq polymerase, primers, dNTPs, MgCl₂ buffer.

5) Identify the nucleotide:

1 point



- Deoxyadenosine triphosphate
 Deoxyguanosine triphosphate
 Deoxycytidine triphosphate
 Deoxythymidine triphosphate

No, the answer is incorrect.
Score: 0

Accepted Answers:
Deoxycytidine triphosphate

6) Arrange the events involved in PCR in a correct order from start to end, keeping the specificity of temperature in mind.

2 points

- Denaturation (95 °C) > Annealing (45 °C) > Extension (100 °C)
 Denaturation (95 °C) > Annealing (54 °C) > Extension (72 °C)
 Denaturation (100 °C) > Extension (54 °C) > Annealing (72 °C)
 Denaturation (100 °C) > Extension (75 °C) > Annealing (45 °C)

No, the answer is incorrect.
Score: 0

Accepted Answers:
Denaturation (95 °C) > Annealing (54 °C) > Extension (72 °C)

7) If a DNA sample containing 350 molecules of DNA is amplified in a master cycler. Then after 30 round of amplification what will be the final amount of DNA? **2 points**

- 3.75*10⁹ molecules of DNA
 3.75*10¹¹ molecules of DNA
 3.50* molecules of DNA 10¹⁵
 3.00*10⁵ molecules of DNA

No, the answer is incorrect.
Score: 0

Accepted Answers:
*3.75*10¹¹ molecules of DNA*

8) What is the key component of Sangers's chain termination methods of DNA sequencing?

1 point

- dNTPs
 ddNTPs
 Template DNA
 Taq polymerase enzyme

No, the answer is incorrect.
Score: 0

Accepted Answers:
ddNTPs