

NEET BIOTECHNOLOGY: PRINCIPLES AND PROCESSES — PROCESSES OF RECOMBINANT DNA TECHNOLOGY: ISOLATION, CUTTING, AMPLIFICATION (PCR) — PYQS

Max. Marks: 88

Questions: 22

Section A (MCQ) — 22 questions

- Q.1** Identify the correct sequence of steps in each cycle of Polymerase Chain Reaction : [NEET (UG) 2026]
- (1) Denaturation → Extension → Annealing
 - (2) Denaturation → Annealing → Extension
 - (3) Annealing → Denaturation → Extension
 - (4) Extension → Annealing → Denaturation

Scan or tap for the full solution



- Q.2** Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): In recombinant DNA technology, lysozyme is used for disrupting bacterial cells while cellulase is for plant cells.

Reason (R): Isolation of genetic material needs disruption of cells.

In the light of the above statements, choose the most appropriate answer from the options given below:

[RE-NEET (UG) 2026]

- (1) A is not correct but R is correct
- (2) Both A and R are correct and R is the correct explanation of A
- (3) Both A and R are correct but R is not the correct explanation of A
- (4) A is correct but R is not correct

Scan or tap for the full solution



- Q.3** During PCR, primers bind to the DNA strands in the _____ step. [RE-NEET (UG) 2026]

- (1) ligation
- (2) denaturation
- (3) extension
- (4) annealing

Scan or tap for the full solution



- Q.4** Polymerase chain reaction (PCR) amplifies DNA following the equation. [NEET (UG) 2025]

- (1) $2n + 1$
- (2) $2 N^2$
- (3) N^2
- (4) 2^n

Scan or tap for the full solution



- Q.5** Following are the steps involved in the process of PCR.

- A. Annealing
- B. Amplification (~1 billion times)
- C. Denaturation
- D. Treatment with Taq polymerase and deoxynucleotides
- E. Extension

Choose the correct sequence of steps of PCR from the options given below :

[RE-NEET (UG) 2024]

- (1) C → A → D → E → B
- (2) A → B → E → D → C
- (3) A → C → E → D → B
- (4) D → B → E → C → A

Scan or tap for the full solution



- Q.6** During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out

[NEET (UG) 2023]

- (1) DNA
- (2) Histones
- (3) Polysaccharides
- (4) RNA

Scan or tap for the full solution



- Q.7** Main steps in the formation of Recombinant DNA are given below. Arrange these steps in a correct sequence.

- A. Insertion of recombinant DNA into the host cell
- B. Cutting of DNA at specific location by restriction enzyme
- C. Isolation of desired DNA fragment
- D. Amplification of gene of interest using PCR

Choose the correct answer from the options given below :

[NEET (UG) 2023]

- (1) C, A, B, D
- (2) C, B, D, A
- (3) B, D, A, C
- (4) B, C, D, A

Scan or tap for the full solution



- Q.8** Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): Polymerase chain reaction is used in DNA amplification.

Reason (R): The ampicillin resistant gene is used as a selectable marker to check transformation.

In the light of the above statements, choose the correct answer from the options given below :

[NEET (UG) 2022]

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- (3) (A) is correct but (R) is not correct
- (4) (A) is not correct but (R) is correct

Scan or tap for the full solution



Q.9 The enzyme (a) is needed for isolating genetic material from plant cells and enzyme (b) for isolating genetic material from fungus. Choose the correct pair of options from the following :

[NEET (UG) 2022 (Phase 2)]

- (1) (a) Cellulase (b) Lipase
- (2) (a) Cellulase (b) Protease
- (3) (a) Cellulase (b) Chitinase
- (4) (a) Chitinase (b) Lipase

Scan or tap for the full solution



Q.10 During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out :

[NEET (UG) 2021]

- (1) Polysaccharides
- (2) RNA
- (3) DNA
- (4) Histones

Scan or tap for the full solution



Q.11 Which of the following is a correct sequence of steps in a PCR (Polymerase Chain Reaction)?

[NEET (UG) 2021]

- (1) Annealing, Denaturation, Extension
- (2) Denaturation, Annealing, Extension
- (3) Denaturation, Extension, Annealing
- (4) Extension, Denaturation, Annealing

Scan or tap for the full solution



Q.12 During the process of gene amplification using PCR, if very high temperature is not maintained in the beginning, then which of the following steps of PCR will be affected first?

[NEET (UG) 2021]

- (1) Ligation
- (2) Annealing
- (3) Extension
- (4) Denaturation

Scan or tap for the full solution



Q.13 DNA precipitation out of a mixture of biomolecules can be achieved by treatment with :

[NEET (UG) 2019]

- (1) Methanol at room temperature
- (2) Chilled chloroform
- (3) Isopropanol
- (4) Chilled ethanol

Scan or tap for the full solution



Q.14 The correct order of steps in Polymerase Chain Reaction (PCR) is

[NEET 2018]

- (1) extension, denaturation, annealing
- (2) annealing, extension, denaturation
- (3) denaturation, extension, annealing
- (4) denaturation, annealing, extension

Scan or tap for the full solution



Q.15 The taq polymerase enzyme is obtained from

[NEET 2016 (Phase 1)]

- (1) *Thermus aquaticus*
- (2) *Bacillus subtilis*
- (3) *Pseudomonas putida*
- (4) *Thiobacillus ferrooxidans*

Scan or tap for the full solution



Q.16 A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant plasmid using

[NEET 2016 (Phase 2)]

- (1) Eco RI
- (2) Polymerase III
- (3) Ligase
- (4) Taq polymerase

Scan or tap for the full solution



Q.17 Which of the following is not correctly matched for the organism and its cell wall degrading enzyme ?

[NEET 2013]

- (1) Plant cells- Cellulase
- (2) Algae-Methylase
- (3) Fungi - Chitinase
- (4) Bacteria-Lysozyme

Scan or tap for the full solution



Q.18 Genes of interest can be selected from a genomic library by using :

[NEET 2013 (Karnataka)]

- (1) Restriction enzymes
- (2) Gene targets
- (3) Cloning vectors
- (4) DNA probes

Scan or tap for the full solution



Q.19 During the process of isolation of DNA, chilled ethanol is added to :

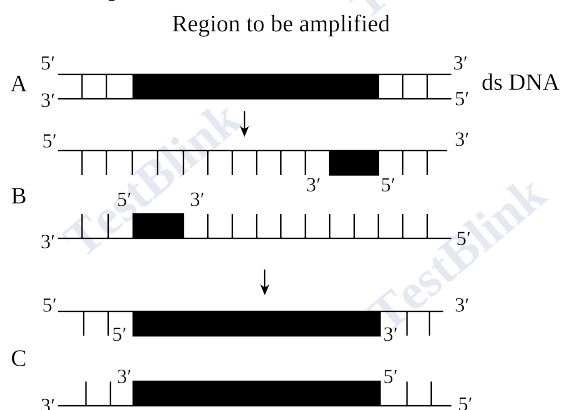
[NEET 2013 (Karnataka)]

- (1) Break open the cell to release DNA
- (2) Remove proteins such as histones
- (3) Facilitate action of restriction enzymes
- (4) Precipitate DNA

Scan or tap for the full solution



Q.20 The figure below shows three steps (A, B, C) of Polymerase Chain Reaction (PCR). Select the option giving correct identification together with what it represents? [AIPMT 2012 (Mains)]



- (1) C - Extension in the presence of heat stable DNA polymerase
- (2) B - Denaturation at a temperature of about 98°C separating the two DNA strands
- (3) A - Denaturation at a temperature of about 50°C
- (4) A - Annealing with two sets of primers

Scan or tap for the full solution



Q.21 Which one is a true statement regarding DNA polymerase used in PCR? [AIPMT 2012 (Prelims)]

- (1) It is used to ligate introduced DNA in recipient cell
- (2) It remains active at high temperature
- (3) It serves as a selectable marker
- (4) It is isolated from a virus

Scan or tap for the full solution



Q.22 Read the following four statements (A-D) with certain mistakes in two of them. Which are the two statements having mistakes?

- A. The first transgenic buffalo, Rosie produced milk which was human alpha-lactalbumin enriched.
- B. Restriction enzymes are used in isolation of DNA from other macro-molecules
- C. Downstream processing is one of the steps of R-DNA technology
- D. Disarmed pathogen vectors are also used in transfer of R-DNA into the host

[AIPMT 2011 (Mains)]

- (1) Statements (B) and (C)
- (2) Statements (A) and (C)
- (3) Statements (A) and (B)
- (4) Statements (C) and (D)

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	2	4	4	1	1	4	2	3	3	2
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	4	4	4	1	3	2	4	4	1	2	3