SAINIK SCHOOL GOPALGANJ
ASSIGNMENTS
BIOLOGY (044)

Chapter 11: Biotechnology Principles and Process **Class: XII**

General Instructions

1. All questions are compulsory.
2. Question1 to 10 is multiple choice questions.
3. Question 11 to 15 is short answer questions.
4. Question 16 to 20 is long answer questions

Q1. Restriction enzymes were discovered by

a) Smith and Nathans
b) Alexander Fleming
c) Berg
d) None

Q2. Bacteria protect themselves from viruses by fragmenting viral DNA with

a) Ligase
b) Endonuclease
c) Exonuclease
d) Gyrase

Q3. Klenow fragment is derived from

a) DNA Ligase
b) DNA Pol-I
c) DNA Pol-II
d) Reverse Transcriptase

Q4. Southern blotting is

a) Attachment of probes to DNA fragments
b) Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet
c) Comparison of DNA fragments to two sources
d) Transfer of DNA fragments to electrophoretic gel from cellulose membrane

Q5. ELISA is

a) Using radiolabelled second antibody
b) Usage of RBCs
c) Using complement-mediated cell lysis
d) Addition of substrate that is converted into a coloured end product

Q6. The DNA fragments have sticky ends due to

a) Endonuclease
b) Unpaired bases
c) Calcium ions
d) Free methylation

Q7. Plasmids are used as cloning vectors for which of the following reasons?

a) Can be multiplied in culture
b) Self-replication in bacterial cells
c) Can be multiplied in laboratories with the help of enzymes
d) Replicate freely outside bacterial cells

Q8. Which is a genetically modified crop?

a) Bt-cotton
b) Bt-brinjal
c) Golden rice
d) All

Q9. PCR technique was invented by

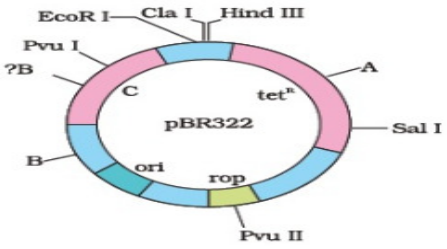
a) Karry Mullis
b) Boyer
c) Sanger
d) Cohn

Q10. RNA interference helps in

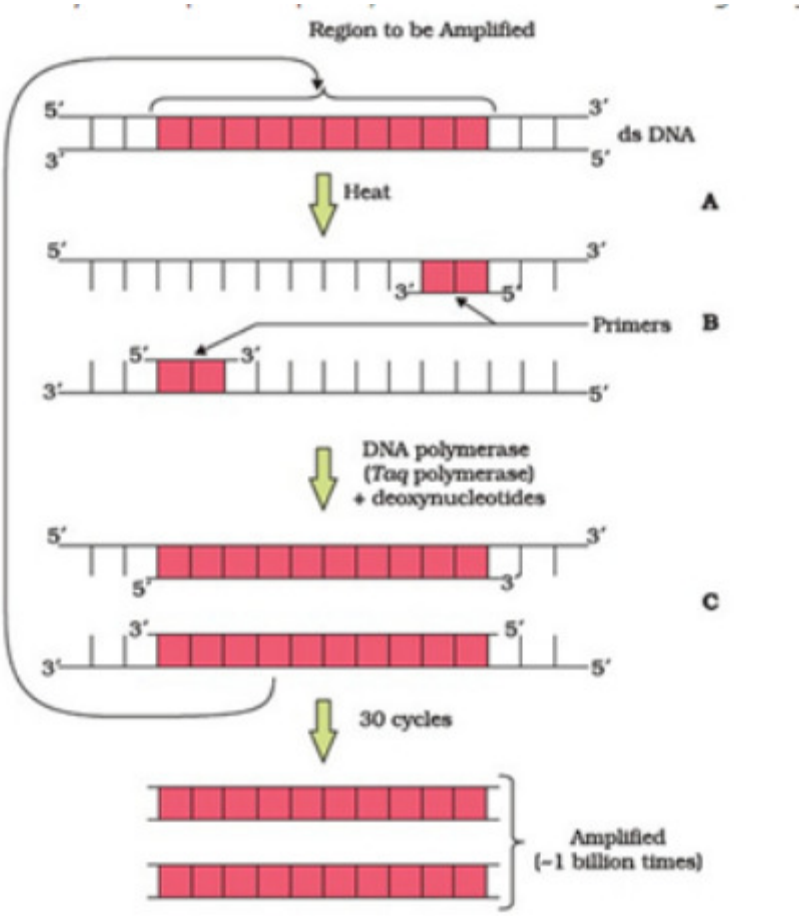
a) Cell proliferation
b) Micropropagation
c) Cell defence
d) Cell differentiation

Q11. What do you understand by gene cloning?

Q12. Name the regions A, B, and C.



Q13. Identify the steps A, B, C in the following diagram



Q14. A mixture of the fragmented DNA was run on an agarose gel. The gel was stained with ethidium bromide but no bands were observed. What would be the cause?

Q15. A gene was being ligated to the plasmid vector to prepare a recombinant DNA during bacterial transformation. An exonuclease was added to the tube accidentally. How will it affect the next step of the experiment?

Q16. What is the role of *Agrobacterium tumefaciens* in plant transformation?

Q17. What are the properties of a good vector?

18. Mention any three vectors-less methods that are used to introduce recombinant DNA into a competent host cell.

Q19. What is a polymerase chain reaction? What are the steps involved? Mention its applications.

Q20.(a) A mixture of the fragmented DNA was run on an agarose gel. The gel was stained with ethidium bromide but no bands were observed. What would be the cause?

(b) How is a DNA viewed on an agarose gel?