



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Sixth Semester – 2020

Paper: Gene Cloning (Advance Course)

Course Code: BOT-313 Part – I (Compulsory)

Time: 15 Min. Marks: 10

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct choice.

(10x1=10)

1: The PCR mixture is cooled down to.....temperature at which the two strands of each molecule could join back together.

- a) 30-40°C b) 60-70°C c) 50-60°C d) 35-45°C

2: In laboratory antibiotic resistance is often used as a.....to ensure that bacteria in culture contain a particular plasmid.

- a) Direct marker b) Indirect marker c) Selectable marker d) none of them

3: The desirable size of a cloning vehicle should be.....

- a) >10 Kb b) < 10 Kb c) 25Kb d) 40 Kb

4: The medium which do not have precise identity and quantity of its components is.....

- a) M9 medium b) LB medium c) Defined medium D) Broth culture

5: The weakening of cell wall is usually brought about by enzyme.....

- a) Ligase b) Lysozyme c) polymerase d) All of these

6: Which component is not used in LB (Luria-Bertani medium)?

- a) Tryptone b) Yeast extract c) CaCl₂ d) NaCl

7: Taq polymerase enzyme is extracted from Bacteria

- a) *Thermus aquaticus* b) *E. coli* c) *S. pylori* d) none of them

8: the final type of DNA polymerase that is important in genetic engineering is.....

- a) Topoisomerase b) Reverse transcriptase c) Polymerase d) All of them

9: All living cells produce DNA ligases, but the enzyme used in genetic engineering is usually purified from

- a) *Aspergillus niger* b) *E. coli* c) *Salmonila* d) both a & b

10: The two ends of DNA that will have some nucleotides without any complementary bases.

- a) sticky ends b) blunt ends c) both a and b d) none of these



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Answer the following short questions (10x2=20)

- .1: How gene cloning is beneficial in agriculture and medicine?**
- .2: Write a short note on vehicles used for gene cloning?**
- .3: Why size and copy number of plasmid is important in gene cloning?**
- .4: Differentiate between Resistance or 'R' plasmid and degradative plasmid**
- .5: Briefly describe the names and functions of DNA manipulative enzymes**
- .6: Differentiate between type I and type II restriction endonucleases**
- .7: Differentiate between blunt ends and sticky ends**
- .8: What does the term 'pBR322' describe?**
- .9: What kind of cloning vectors are used for higher plants?**
- .10: Define episomes.**

Q.3. Answer the following questions (6x5=30)

- 1: Explain all steps involved in polymerase chain reaction**
- 2: Write a note on classification of plasmids**
- 3: When restriction endonucleases were discovered and also describe their types?**
- 4: What are the uses of gene cloning in research and biotechnology briefly describe?**
- 5: Explain transformation, how the uptake of DNA takes place by bacterial cells?**
- 6: Write a note on 'pBR322' plasmid**