

**B.Sc. 5th Semester Honours (Practical) Examination, 2022 (CBCS)**

**Subject: Zoology**

**Paper: DSE-1 (Animal Biotechnology)**

**Time: 3 Hours**

**Full Marks: 20**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

1. A piece of DNA 900 bp long is cloned and then cut out of the vector for analysis. Digestion of this linear piece of DNA with three different restriction enzymes singly and in all possible combinations of pairs gave the following restriction fragment size data:

<b>Enzymes (s)</b>	<b>Restriction fragments</b>
Eco-RI	200 bp, 700 bp
Hind-III	300 bp, 600 bp
Bam-HI	50 bp, 350 bp, 500 bp
Eco-RI+ Hind-III	100 bp, 200 bp, 600 bp
Eco-RI+ Bam-HI	50 bp, 150 bp, 200 bp, 500 bp
Hind-III+ Bam-HI	50 bp, 100 bp, 250 bp, 500 bp

Construct a restriction map from these data.

06

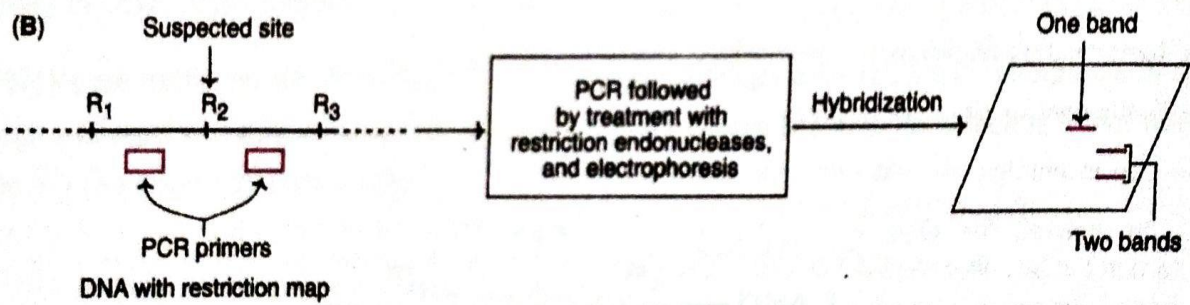
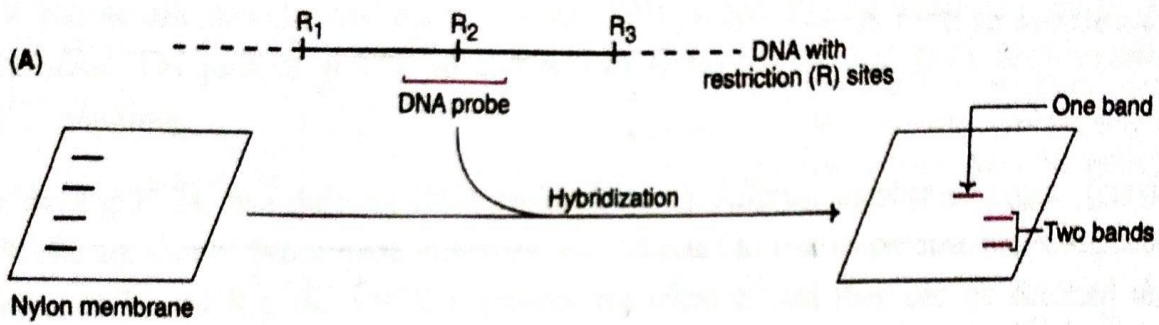
2. During the lab, calculate the transformation efficiency of the following experiment using the information and the hypothetical results listed below. Show your work and units.

06

- DNA plasmid concentration:  $6 \times 10^{-3} \mu\text{g}/\mu\text{l}$
- Cells incubated with 560  $\mu\text{l}$   $\text{CaCl}_2$  transformation solution and split into two tubes
- 20  $\mu\text{l}$  pGLO plasmid solution to the tube of +pGLO
- 200  $\mu\text{l}$  LB broth
- 50  $\mu\text{l}$  cells spread on agar
- 213 colonies of transformants on the LB/amp plate

3. Identify the following techniques: (A and B):

1.5+1.5=3



4. Submission of Project report:

03

5. Submission of Laboratory Note Book:

02

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