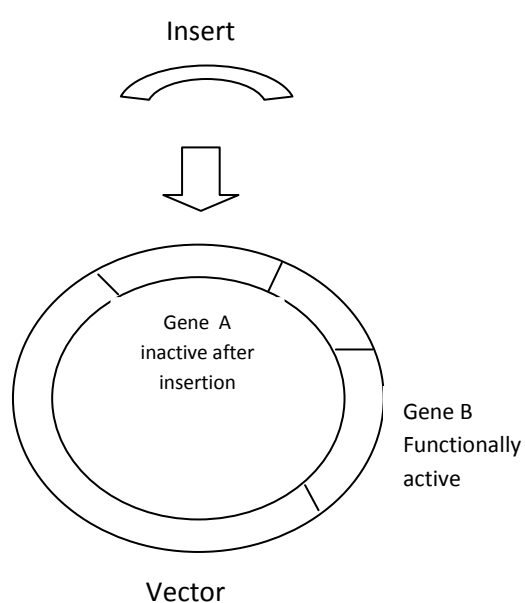


Paper Biotechnology 99/0**Marking Scheme**

- | | |
|---|------------------------|
| 1. Grow in solution, no adherence to vessel; e.g. blood cells. | 1/2 + 1/2 |
| 2. <i>Taxus</i> species; anti carcinogenic. | 1/2 + 1/2 |
| 3. Used as antifoaming agent to prevent denaturation | 1/2 + 1/2 |
| 4. A stationary phase culture has stopped growing. | 1 |
| 5. $T_d = 0.693/\mu$ | 1 |
| 6. Matrix assisted laser desorption and Ionisation. Proteins are volatalised and ionised for analysis of their molecular masses (m/z ratio). | 1/2 + 1 ^{1/2} |
| 7. Algorithm based on known training sets, inaccurate. Reason: overlapping genes/splice variants. Pg 61 | 2 |
| 8. Any one from book (Pg 122-130)
Bt Cotton- pest resistance/ canola, soyabean, corn, cotton- herbicide tolerant/ papaya etc.- virus resistant. | 2 |
| 9. cDNA for expressed genes; gDNA for all genome sequences. | 1 + 1 |
| 10. To store novel strains/species for repository.
MTCC Chandigarh, NBAIM (Mau, UP) | 1
1 |
| 11. Any two components from pg 110 such as -
Sucrose as Carbon source, ammonium salts as nitrogen source, vitamins, hormones as growth regulators etc. | 2 |
| 12. Mortality of finite cultures; lack of adherence of continuous cultures etc.
pg 137-138 (any two). | 2 |
| 13. Protein engineering/ site directed mutagenesis. | 1 |
| Application: subtilisin/ epitope micromanipulation (page 53) | 1 |
| 14. Vector selection is based on size of fragments, a 22 kb fragment can be suitably cloned in phage based vector | 1 |
| Host: Bacterium | 1 |
| 15. Generation of various parts of plants: roots, shoots. | 2 |
| 16. Any 3:
High production capacity/ ease of source material collection/ low operational cost/ ease of production. | 3 |
| 17. To solve medico-legal cases. | 1 |

- Principle: DNA from subject is isolated and restricted, followed by comparison of RFLPs to assess variations. Pg 7 + 8 2
18. Pg 91 for graph (fig. 6) and other details 3
19. pH- stability of protein 1
less time- to prevent denaturation 1
agitation- causes instability in protein 1
20. Vector in which foreign DNA is inserted has genes A & B for different antibiotic resistance. Cloning into A causes insertional inactivation and hence, causes sensitivity to antibiotic A. Since gene B is functionally active hence resistance to B results.



OR

As on page 17

Principle based on insertional inactivation of lac Z gene on the vector (PUC 19) used.

No insertional inactivation, β - galactosidase expressed.

---- X-gal converted to blue product- therefore, blue colonies

Insertional inactivation, β - galactosidase not expressed ----- white colony.

- | | |
|--|------------------|
| | 3 |
| 21. 100mg/ 500ml; therefore 500X1000mg in 25X10 ⁵ ml or 2500L. | 1 ^{1/2} |
| For 50LX2 fermentors/week= 2500/ 100X4 = 6 months/25 wks. | 1 ^{1/2} |
| 22. Fusion of protoplasts results in intergenetic somatic hybrids. | |
| Benefits: to obtain hybrids with useful agronomic traits not normally found through sexual fertilisation. e.g. potatoes, topatoes. | 3 |
| 23. Animal cells require O ₂ for energy (ATP production). | 1 ^{1/2} |
| Addition of microcarrier beads/ roller culture bottles. | 1 ^{1/2} |
| 24. For better compression of data. B, H | 1 + 2 |
| 25. Antigen epitope specific; e.g. OKT 3/ Herceptin etc | 1 + 2 |
| 26. pg 45 for MS | |
| OR | |
| pg 36-38 for protein finger printing | |
| interpretation of results with respect to Sickle cell anaemia | 4 +1 |
| 27. Pg 67-69 | |
| Principle | 2 |
| Diagram | 2 |
| Interpretation | 1 |
| 28. Sanger's dideoxy method pg 23-25 (fig 15) | 3 +2 |
| OR | |
| Description of Southern Hybridization; (Fig 10), Page 20 | |