

SEM	SET	PAPER CODE	TITLE OF THE PAPER
IV	2013	12PBT4115	PLANT AND ANIMAL BIOTECHNOLOGY

**SECTION – A****Answer all the questions:****20 x 1 = 20****Choose the correct answer:**

- You need to develop multiple shoots from a callus tissue. How will you alter the hormone concentration?
  - Increase BAP and decrease NAA
  - Increase NAA and decrease BAP
  - Equal proportions of NAA and BAP
  - only NAA or only BAP
- Agrobacterium* based transformation of protoplasts obtained from dicot is based on the fact that
  - these exhibit strong chromosomal structures
  - these have two cotyledons
  - these exhibit strong wound response
  - these have long tap root system
- Which one of the following is the negative growth factor of cell proliferation?
  - PDGF
  - EGF
  - FGF
  - TGF

4. The first field tests were of which genetically altered organism?
  - a) Bt corn
  - b) Vaccinia virus containing a gene from the rabies virus
  - c) The 'flavrsvr' tomato
  - d) Strawberry seedlings sprayed with "ice-minus" bacteria
5. The very first animal to be patented was
  - a) oncomouse
  - b) dolly
  - c) ANDi
  - d) Transgenic sheep

**Fill in the blanks:**

6. LPS stands for \_\_\_\_\_.
7. The trade name for silicon carbide fibres used for plant transformation is \_\_\_\_\_.
8. Glucocerebrosidase, a lysosomal enzyme produced in transgenic plant approved by FDA is being used to treat \_\_\_\_\_ disease.
9. The number of time the culture has been subcultured is called \_\_\_\_\_.
10. Tissue specific stem cells give rise to single cell type are referred to as \_\_\_\_\_.

**State True or False:**

11. Cytokinin promotes shoot differentiation.
12. The opine synthesis gene resides outside the T-DNA.
13. 5-amino uracil, the inhibitor of DNA synthesis when added to cultures result in accumulation of cells at metaphase.
14. Lesh Nyhan syndrome is due to the defect in a gene that encodes for an enzyme hypoxanthine – guanine phosphoribosyl transferase.
15. Transgenic mouse is a favourite animal for harvesting human organs.

**Answer in one or two sentences:**

16. What are cybrids?
17. What are opines?
18. Define cell line.
19. Define genetic marker gene with one example.
20. Which human protein was expressed in large quantities in sheep milk?

**SECTION – B**

**Answer all the questions:**

**5 x 4 = 20**

21. a. Explain the method of micropropagation and its application.

**OR**

- b. What are synthetic seeds? Explain its preparation and comment on its advantage.
22. a. Describe the steps involved in the integration of *Agrobacterium* into the host genome.

**OR**

- b. Narrate strategies involved in developing the insect resistant transgenic plants.
23. a. Discuss the role of transgenic plant as bioreactors with suitable example.

**OR**

- b. Write a short note on organ culture highlighting its significance.
24. a. Write short notes on gene therapy and its application.

**OR**

- b. Write short notes on stem cell and highlight its importance in human welfare.
25. a. What are the two types of cloning? Give an example for each and explain.

**OR**

- b. What is tissue specific knock – out mice? Substantiate the mechanism with relevant application.

### **SECTION – C**

**Answer any FOUR questions:**

**4 x 15 = 60**

26. Explain the principle and protocol for isolation and fusion of protoplast.
27. Genetic engineering in plants is in limelight for feeding the hungry million people.
- a. *Agrobacterium* mediated gene transfer has not been effective in monocots. Why? (4)
- b. Select an appropriate genetic engineering method available for transfer of desirable gene into monocots. (4)
- c. Justify the method employed. (3)
- d. Discuss the advantages and limitations that you foresee for the chosen method. (4)
28. Elaborate the methods available for development and maintenance of cell lines.
29. Discuss in detail about principle, method, types and applications of gene therapy.
30. Describe the method of producing a transgenic sheep. List down any five therapeutic products developed by animal pharming.

\*\*\*\*\*