

T-E-VI Sem - Biotech

(27)

Stem cell biology

TE/VI/CBGS/BT/SCB

QP Code : 570001

( 3 Hours)

[ Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory.  
 (2) Attempt any three questions from Q. Nos. 2 to 6  
 (3) Draw neat labelled diagram wherever necessary.

1. Write short notes on the following. 20
  - a) Intrinsic programming in the embryo development
  - b) Transit-amplifying cells
  - c) Process of sequential induction
  - d) Properties of stem cells
2. a) Explain how regulatory mutations transform plant topology? 10  
 b) Why Arabidopsis serves as a model organism for plant molecular genetics? 10
3. a) Write a note on the renewal of epithelial cells explaining the underlying genetic mechanism. 10  
 b) Cell fate in the developing nematode is predictable. Explain. 10
4. a) Discuss the mechanism of cell proliferation and specialization? 10  
 b) Explain the hematopoietic stem cell as multipotent stem cell? 10
5. a) Discuss the potential use of stem cells in Diabetes treatment? 10  
 b) Discuss Genetically modified stem cells and gene therapy? 10
6. a) What are the similarities and differences between embryonic and adult stem cells? 5  
 b) Explain totipotent, multipotent, pluripotent and unipotent cells? 5  
 c) Describe the methods used for generating stem cells? 5

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