

(3 Hours)

Marks : 80

- NB : (1) Question No.1 is Compulsory.
(2) Solve **any three** question out of remaining questions.
(3) Draw suitable diagram wherever necessary.

1. Explain the following briefly (**Any Four**) **20**
 - (a) Important properties of stem cells
 - (b) Intrinsic Programming in embryonic development
 - (c) Multipotent stem cells
 - (d) Embryonic stem cells
 - (e) Transient amplifying cells

 2. (a) Write a note on mechanism of cell movement ? **10**
(b) Explain the development of *Caenorhabditis Elegans*. **10**

 3. (a) Explain with an example, how homeotic selector genes specify the parts of a flower? **10**
(b) How regulatory mutations transform plant topology? **10**

 4. (a) Write a note on the renewal of epithelial cells explaining the underlying genetic mechanism. **10**
(b) What are some of the important criteria for model organisms chosen for the study of developmental genetics? **10**
(c) Explain the process of sequential induction in the early development of an organism. **10**

 5. (a) Morphogens play very important role in the development of an organism. Justify giving example. **10**
(b) Explain why hematopoietic stem cell is called multipotent stem cell ? How they are formed **10**

 6. (a) Can stem cells be used for regenerating cells of the nervous system? Explain with an example, **10**
(b) Discuss about the main concern with human embryonic stem cell research and their potential use in regenerative medicine ? **10**
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