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1. What is culture media? Discuss different types of culture media in details. 10

**OR**

- a) Write a note on Animal cell culture. 2½
- b) Write a brief account on advantages and limitations of animal tissue culture. 2½
- c) Write a note on constituents of culture medium. 2½
- d) Give a brief account on natural media. 2½

2. Describe different methods of cell type separation in detail. 10

**OR**

- a) Give a brief account on primary cell culture. 2½
- b) Write a note on Explant culture. 2½
- c) Add a note on Cryopreservation. 2½
- d) Write in brief about maintenance and management of established cell lines. 2½

3. What are stem cells? Describe in details about methods of culturing stem cells in details. 10

**OR**

- a) Write about various applications of embryonic stem cells. 2½
- b) Write a note on measurement of cell death. 2½
- c) Give a brief account on cell transformation. 2½
- d) Write in brief about three dimensional culture. 2½

4. What are vaccines? Describe in detail about process involved in vaccine production. 10

**OR**

- a) Write a note on mass production of insulin. 2½
- b) Give an account on embryo transfer in human. 2½
- c) Give applications of transgenic animals. 2½
- d) Write a note on embryo cloning. 2½

**5. Solve the following any ten.**

- a) What is cell culture? **1**
- b) What is synthetic media? **1**
- c) What is contact inhibition? **1**
- d) What is primary cell culture? **1**
- e) What is explant? **1**
- f) What is germplasm? **1**
- g) What is apoptosis? **1**
- h) What is cell cloning. **1**
- i) What is cell synchronization? **1**
- j) Write the name of any two vaccines. **1**
- k) What is artificial insemination? **1**
- l) What are transgenic animals? **1**

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