

B.Sc. (Part-III) Semester-V Examination

5S : BIOTECHNOLOGY (R/V)

(Animal Cell Biotechnology)

Time : Three Hours]

[Maximum Marks : 80

1. (A) Fill in the blanks :

- (i) Most widely used enzyme for tissue disaggregation is ____.
- (ii) ____ is the father of animal cell culture.
- (iii) Phenol red used in animal cell culture is the ____ indicator.
- (iv) ____ medium is used for the selection of hybrid cells produced by hybridoma technology.

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(B) Choose the correct alternative :

- (i) RPMI stands for :
 - (a) Roswell Park Memorial Institute
 - (b) Roswell Packerd Memorial Institute
 - (c) Rous Park Medium Information
 - (d) Rous Park Memorial Institute
- (ii) The first successfully cloned animal was :
 - (a) Monkey
 - (b) Rabbit
 - (c) Sheep
 - (d) Horse
- (iii) Initial cultivation of frog nerve cell was done by :
 - (a) Harrison
 - (b) Carrel
 - (c) Dulbecco
 - (d) Eagle

(iv) Interferons are :

- (a) Anti-bacterial proteins (b) Anti viral proteins
 (c) Bacteriostatic proteins (d) All of these

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(C) Answer in **one** sentence each :

- (i) Define cell line.
 (ii) Gap junction.
 (iii) Monoclonal antibody.
 (iv) What are interleukins ?

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2. (a) Describe the contribution of Ross Harrison and Alex Carrel in the development of cell culture. 4
 (b) Explain extracellular matrix. 4
 (c) Describe tight junctions. 4

OR

- (p) Explain desmosomes and adherens junction. 4
 (q) Describe the role of proteoglycans in extracellular matrix. 4
 (r) What are the different types of tissues used for animal cell culture ? 4

3. (a) Write down the importance of CO₂ incubator in animal cell culture. 4
 (b) What are the good laboratory practices ? 4
 (c) Describe layout of animal tissue culture laboratory. 4

OR

- (p) Write down the working principle of flow cytometer. 4
 (q) Explain laboratory safety and Biohazards. 4
 (r) What is the role of biosafety cabinets in animal cell culture ? 4

4. (a) Explain the role of different constituents of animal cell culture medium. 4
 (b) Describe the role of serum in culture medium. 4
 (c) What is balanced salt solution, mention its applications ? 4

OR

- (p) Comment on buffering and osmolarity of medium. 4
- (q) Explain serum free medium. 4
- (r) Explain the role of different supplements used in media preparation. 4
5. How will you prepare primary culture ? Explain the mechanical and enzymatic disaggregation in detail. 12

OR

- Describe in detail procedure of cryopreservation of animal cells. 12
6. Mention the applications of animal cell culture in detail. 12

OR

- What is monoclonal antibody ? Explain the procedure of hybridoma technology. 12
7. (a) Describe suspension culture. 4
- (b) What are micro-carriers ? Explain their role. 4
- (c) How will you establish synchronous culture ? 4

OR

- (p) Explain continuous culture. 4
- (q) Describe the role of roller bottles in roller culture of anchorage dependent cells. 4
- (r) What is Adherent culture ? 4

