P. P. SAVANI UNIVERSITY

Fifth Semester of B.Sc. Examination
December-2021
SSBT3070–Animal Biotechnology I

09.12.2021, Thursday Time: 12:30 p.m. to 3:00 p.m. Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions [10]

1.1 Objectives [05]

1.1a Foaming in media can lead to

- **A** decrease in the rate of protein denaturation
- **B** increase in the risk of contamination
- **C** increase in the gaseous diffusion
- **D** All of the above

1.1b Variability from one passage to the next passage can arise because of

- **A** heterogeneity in growth rate
- **B** the capacity to differentiate within the population
- **C** both A and B
- **D** none of the above

1.1c The presence or formation of new, abnormal growth of tissue is known as

- **A** Angiogenesis
- **B** Neoplasia
- **C** Angioplasia
- **D** Neogenesis

1.1d When added to a cell culture, trypsin

- **A** breaks down the proteins which enable the cells to adhere to the vessel
- **B** breaks down the proteins which enable the cells to adhere to other cells
- **C** both A and B
- **D** breaks cell membrane

1.1e Polyamine oxidase

- **A** increases the level of polyamines
- **B** promotes cell proliferation in animal tissue culture
- **C** both A and B
- **D** decrease the level of polyamines

1.1f Presence of proteins in media

- **A** decreasing viscosity
- **B** promotes cell attachment
- **C** promotes trypsin activity
- **D** All of the above

1.1g Which of the following protein(s) act as a carrier in animal cell culture

medium

A Fibronectin
B α2-macroglobulin
C Albumin
D All of the above

1.1h Presence of proteins in media

A decreasing viscosity
B promotes cell attachment
C promotes trypsin activity
D All of the above

1.1i programmed cell death due to loss of anchorage is termed as

A Necrosis
B Anoikis
C Necrokis
D Anosis

1.1j Which of the following is not true for a cell line

A represent only one or two cell types
B many heterotypic cell–cell interactions are lost
C many homotypic cell–cell interactions are lost
D All of the above

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) **[05]**

1.2a Define Trypsinization
1.2b Define Subculturing
1.2c Define Histotypic culture
1.2d Define Organotypic culture
1.2e Define EMT

Q.2 Short Notes (Attempt any two) **[06]**

A How do negatively charged substrates help negatively charged cells to adhere?
B Progenitor cells
C What were the factors that contributed in the shift to mammalian cell culture from frog cell culture?

Q.3 Explain in detail (Attempt any two) **[14]**

A What are the advantages and limitations of tissue culture?
B Describe (i) Cell adhesion molecules, (ii) the types of tissue culture.
C Physiochemical properties for animal cell culture

Section-II (Total Marks - 30)

Q.1 Short Questions

1.1 Objectives **[10]**

[05]

1.1a For disaggregation of fibrous tissue ..... is a preferred choice

A mechanical disaggregation
B warm trypsinization

C cold trypsinization
D collagenase method

1.1b Serum in the media
A promotes tryptic activity
B promotes cell detachment
C inhibits tryptic activity
D All of the above

1.1c Fibronectin can be added to serum-free media
A for amino acid supplementation
B for carrying iron
C for cell matrix interaction
D for carrying lipoprotein

1.1d The stage of the culture after isolation of the cells but before the first subculture is known as
A primary cell culture
B passage 1
C secondary culture
D both A and B

1.1e Serum-free media provides
A ability to make a medium more selective for a particular cell
B regulation of proliferation
C regulation of differentiation
D all of the above

1.1f ..... method causes least damage to cells for primary cell culture
A Mechanical disaggregation
B Cold Trypsinization
C Warm trypsinization
D Both B and C

1.1g Which of the following is true for primary cell culture?
A they are similar to the in vivo state
B they exhibit normal physiology
C they provide excellent model systems for metabolic studies, aging, and signaling studies
D all of the above

1.1h Primary cells may be manipulated for indefinite subculture through an in vitro process called
A subculturing
B transformation
C passage 1
D All of the above

1.1i Metal salts tend to precipitate in
A alkaline pH in the presence of phosphate
B acidic pH in the presence of phosphate
C alkaline pH in the presence of Ca^{2+} ions
D acidic pH in the presence of Ca^{2+} ions

1.1j Cells are more fragile in

A serum containing medium
B serum free medium
C FBS containing medium
D both B and C

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) **[05]**

1.2a Anchorage dependent cells require substrate to attach with (True/False)

1.2b Serum free media requires protease inhibitor (True/False)

1.2c Addition of serum makes the media chemically defined (True/False)

1.2d Serum-free media is less viscous compared to serum-containing media (True/False)

1.2e Batch-to-batch variation is a common problem of serum-free media (True/False)

Q.2 Short Notes (Attempt any two) **[06]**

A Protein free media

B Methods of primary cell culture

C Limitations of serum-containing medium

Q.3 Explain in detail (Attempt any two) **[14]**

A Describe various types of animal tissue culture. What are advantages of animal cell culture?

B What do you mean by primary cell culture? Explain various applications of primary cell culture.

C Serum components and their roles in animal cell culture