

P P SAVANI UNIVERSITY
Fifth Semester of B.Sc. Examination
Dec. 2020- Jan 2021
SSBT3070-Animal Biotechnology I
Time: 10:00 a.m. to 12:30 p.m.

04.01.2021, Monday

Maximum Marks: 60

Section-A (Total Marks - 20)

Q.1 Objectives (20 MCQ Compulsory-20 mark each)

(20)

- 1 What is (are) the roles of Hydrocortisone in animal cell culture?
 - A Promote Cell attachment
 - B Promote Cell proliferation
 - C Induce cell differentiation at high cell density
 - D All of the above
- 2 In culture medium, Glutamine is
 - A a source of alternative energy
 - B a source of alternative nitrogen
 - C a source of amino acid
 - D All of the above
- 3 'Epithelial-mesenchymal transition' is a process by which
 - A Epithelial cells lose their cell-cell adhesion
 - B Mesenchymal cells lose their cell-cell adhesion
 - C Both Epithelial and Mesenchymal cells lose their cell-cell adhesion
 - D None of the above
- 4 Which of the following is NOT a type of Animal Tissue Culture
 - A Plasma Clot method
 - B Raft Method
 - C Somatic Embryogenesis Method
 - D Combination Method
- 5 The animal cell culture media should be
 - A hypotonic
 - B hypertonic
 - C isotonic
 - D None of the above
- 6 Laminin in media is used as a
 - A a carrier of iron
 - B a carrier of lipids
 - C an adhesion factor
 - D a protease inhibitor
- 7 Following is an example of anchorage-independent cells
 - A Keratinocytes
 - B Fibroblast
 - C Lymphocytes
 - D Hepatocyte
- 8 Which of the following is/are true for the temperature requirement in mammalian cell culture?
[Choose all the correct answers]
 - A Optimal temperature for a given cell culture is dependent on the body temperature of the organism
 - B Cultured mammalian cells will tolerate considerable increase in temperature
 - C Cultured mammalian cells can tolerate considerable drops in temperature
 - D All the options are true
- 9 Transformation may occur
 - A by chemical induction
 - B by viral induction

- C spontaneously
D by all of the above
- 10 Aprotinin is used as
A a protease inhibitor
B antifoaming agent
C a carrier for nutrition
D None of the above
- 11 Which of the following is not true for continuous cells lines
A they proliferate indefinitely (immortalized)
B they are more robust
C they are genetically very stable
D none of the above
- 12 Collagenase method is of greatest benefit when [Choose all the correct answers]
A the tissue is too fibrous
B the tissue is too sensitive to be used with trypsin
C the tissue is cancerous
D none of the options are correct
- 13 Which of the following is true for continuous cell lines
A they do not represent in vivo state
B they are genetically modified
C they have altered physiological properties
D all of the above
- 14 In contrast to the cells from serum containing media, the cells from serum-free media
A are more fragile
B are more prone to physical damage
C require media components in ultra pure state
D all of the above
- 15 Phenol red is used in animal cell culture media
A as a pH indicator
B as a reagent to maintain pH
C foaming indicator
D temperature indicator
- 16 Primary culture has following characteristic features
A unlimited life span
B homogenous culture
C abnormal physiology
D none of the above
- 17 Fibronectin in media serves as
A a carrier of iron
B a carrier of lipids
C an adhesion factor
D a protease inhibitor
- 18 For the disaggregation of soft tissuestechnique is usually employed
A mechanical disaggregation
B warm trypsinization

- C cold trypsinization
- D collagenase method

- 19 The inclusion of pyruvate in the medium enables cells to
- A decrease their endogenous production of CO₂
 - B decrease their endogenous production of O₂
 - C increase their endogenous production of O₂
 - D increase their endogenous production of CO₂

- 20 Which of the following proteins act as a carrier in animal cell culture medium
- A Fibronectin
 - B α₂-macroglobulin
 - C Albumin
 - D All of the above

Section-B (Total Marks - 40)

- Q.1 Short Notes (attempt all four compulsory- 3 marks each) (12)**

- A What were the factors that contributed to the shift to mammalian cell culture from frog cell culture?
- B Progenitor cells
- C Differentiation and proliferation
- D Conditioned media

- Q.2 Explain in detail (attempt all four compulsory-7 marks each) (28)**

- A What are the advantages and disadvantages of animal cell culture? Describe types of animal cell culture with suitable diagram.
- B Describe the physiochemical properties expected to be possessed by culture media for in vitro culture of animal cells.
- C Explain important serum components which influence animal cell culture
- D Describe the important techniques used for primary cell culture
- E Describe (i) application of primary cell culture, (ii) approaches used for developing serum free media