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SARDAR PATEL UNIVERSITY  
M.Sc (IV Semester) Examination (CBCS)  
Friday, 13<sup>th</sup> April, 2018  
10:00 a.m. to 1:00 pm  
Biochemistry  
PS04CBIC01 – Animal Biotechnology

SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

TOTAL MARKS: 70

Q.1 Tick mark / select the correct answer for the following. (Only correct option against given question number needs to be written in provided answer book) (08 Marks)

1. The predominant amino acids of collagen are
  - a. Glycine – Proline
  - b. Lysine - Cysteine
  - c. Valine - Glutamic acid
  - d. Hydroxyproline - Glutamic acid
  
2. Which of the following is a cell line from spleen?
  - a. WEHI
  - b. CaCO
  - c. Friend
  - d. HaCaT
  
3. Which enzyme marker is suitable for the characterization of macrophages?
  - a. Proline hydroxylase
  - b. Non specific esterase
  - c. Glutamyl synthetase
  - d. Angiotensin converting enzyme.
  
4. The predominant signaling observed in malignantly transformed cells is
  - a. Endocrine
  - b. Paracrine
  - c. Autocrine
  - d. Juxtacrine
  
5. pH 4 i.e. acidic pH, phenol red indicator turns:
  - a. Yellow
  - b. Purple
  - c. Pink
  - d. White
  
6. Which one of the following is the firstly established continuous human cell line
  - a. Vero
  - b. A 549
  - c. HeLa
  - d. MCF-7
  
7. Which of the following cells are independent to senescence?
  - a. Germ cells
  - b. Stem Cells
  - c. Transformed Cells
  - d. all of above
  
8. The role of glucose in cell culture media is:
  - a. Source of nitrogen
  - b. Source of energy, carbon
  - c. Adjusts osmotic pressure
  - d. Growth stimulator

[P.T.O.]

Q.2 Answer any seven from the following:

- a) State two points of difference between anchorage dependent and anchorage independent cells
- b) Define the term 'differentiation'. List the main parameters that control differentiation?
- c) Which parameters are checked to study viability assay during the use of cell lines for toxicological study? Write the importance of this assay.
- d) Name any two energy sources suitable to use in media and write their advantages and disadvantages.
- e) Name the cytoskeleton, adaptor protein and linker adhesive protein involved in the construction of adherent junctions and desmosomes.
- f) Briefly discuss the types of air filters used in Laminar Flow Cabinet
- g) Explain the importance of matrigel as well as feeder layer and write their importance in cell culture
- h) Which parameters indicate the need for the change of media during sub-culture?
- i) State the role of role of CO<sub>2</sub> incubator in animal tissue culture.

Q.3 (A) Describe the molecular organization and dynamics of cytoskeleton components. 6

(B) Give an account of different molecules involved in cell-cell adhesion and cell-matrix adhesion in animal tissues; and write their significance during cell culture. 6

OR

(B) Discuss the use of physiological and non-physiological factors to induce differentiation in cell line. 6

Q.4 (A) Discuss the importance and composition of serum free media. 6

(B) Describe the protocol for the development of primary culture from any embryonic tissues using mechanical disaggregation and explant methods. 6

OR

(B) Enlist any two media used in animal cell culture. Describe the different physicochemical properties of media. 6

Q.5 (A) How DNA and chromosomes can be used for the characterization of cells? Discuss in detail. 6

(B) Write the characteristics of transformed cells and describe the methods for inducing immortalization in cultured cells. 6

OR

(B) Enlist the various cell separation methods and briefly describe the cell separation techniques based on cell density and cell size. 6

Q.6 (A) Describe the detailed culture protocol of any one of the following cells. (i) Hepatocytes (ii) keratinocytes (iii) Mesenchymal cells 6

(B) Define adult stem cells and embryonic stem cells with suitable examples; and write their applications. 6

OR

(B) Write short notes on: (i) Methodology for the construction of transgenic animals OR (ii) Embryo technology 6