[25] SEAT No._____ No. of Printed Pages : 2

SARDAR PATEL UNIVERSITY

M.Sc (IV Semester) Biochemistry Examination (CBCS)

Monday, 18th March, 2019

10:00 am to 1:00 pm

PS04CBIC21 – Animal Biotechnology

TOTAL MARKS: 70

Q.1 Write the most correct answer for the following multiple choice questions. **(08 Marks)**

1. What is the effect of excess accumulation of metabolite products (lactate and ammonium) on cells?
   (a) They act as growth promoters
   (b) They act as growth inhibitors
   (c) Have no effect on cells
   (d) Lactate helps in the growth while ammonium inhibits the growth
2. Which of the following parameters are accessed for evaluating the quality of cell culture?
   (a) Morphology (b) growth rate (c) plating efficiency (d) all of the above
3. The cytosol-facing domains of most of the cell adhesion molecule (CAM) proteins are usually
   (a) connected to elements of the cytoskeleton
   (b) changing in cytoplasm, not connected
   (c) connected to inner side of plasma membrane
   (d) CAMs do not have any cytosol-facing domains
4. In animal cell culture, particularly mammalian cell culture, transformation means
   (a) uptake of new genetic material
   (b) phenotypic modifications of cells in culture
   (c) both (a) and (b)
   (d) release of genetic information
5. Which of the following is not a predominant amino acid of collagen?
   (a) Glycine (b) Proline (c) Hydroxyproline (d) Methionine
6. Gap junctions are predominant in
   (a) Urinary bladder (b) Cardiac muscles (c) Adipose tissue (d) Muscle tissue
7. The factor responsible for reducing the O2 toxicity for cultured cells is
   (a) Selenium (b) Glutamine (c) Biotin (d) Transferrin
8. Which of the following enzymes for disaggregation of tissue may result into poor platting efficiency?
   (a) Collagenase (b) Trypsin (c) Pronase (d) Dispase

Q.2 Answer the following questions (any seven). (14)

1. Why Biosafety level-2 or higher is necessary for cell-culture laboratory?
2. State the factors that necessitate the need for replacement of medium?
3. Describe amniocytes and briefly mention about amniocentesis.
4. How mycoplasma contamination in a cell culture are detected?
5. Explain the role of physiological and non-physiological factors in inducing differentiation in cultured cells.
6. Name the growth factors/hormones required in the media for the culture of Mammary, Epithelia, Fibroblast, Neuronal cells, Osteocytes.
7. How is the suspension culture different from a monolayer culture? Explain with example.
8. How can angiogenesis and Invasiveness be checked in malignantly transformed cell lines?

(P.T.O)

Q.3 (a) Discuss how biology of the cultured cells differ from the same type of cells grown in vivo. (6)

(b) Explain the various cell adhesion molecules that influences animal cell in culture. (6)

OR

(b) i) Explain the usefulness of CO2 incubator in cell culture laboratory (3)

ii) Differentiate between upright microscope and inverted microscope. (3)

Q.4 (a) Write a detailed note on different ingredients of chemically defined media for cultured cells and write their significance. (6)

(b) Discuss the chromosome and DNA analysis techniques used for the characterization of cell lines. (6)

OR

(b) Describe the complete protocol for the development of primary culture using appropriate disaggregation technique from human biopsy material. (6)

Q.5 (a) Describe different techniques involved in the animal cell separation. (6)

(b) Write the characteristics of transformed cells; and explain immortalization of cell line by viral genes and telomerase induced immortalization of cell line. (6)

OR

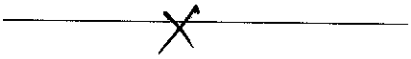
(b) Explain in detail monolayer cloning and add a note on the various techniques used in isolation of clones. (6)

Q.6 (a) Write a note on embryonic and adult stem cells. (6)

(b) Write a short note on embryo technology with special reference to embryo sexing and embryo splitting. (6)

OR

(b) Write a short note on therapeutic applications stem cells. (6)



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