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SEAT No. _____

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SARDAR PATEL UNIVERSITY
M.Sc (IV Semester) Zoology Examination (CBCS)
Monday, 18th March, 2019
10:00 am to 1:00 pm
PS04CZOO21 – Animal Biotechnology

TOTAL MARKS: 70

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

- Disaggregating of cells can be achieved by
(a) Physical disruption (c) Enzymatic digestion
(b) Treating with chelating agents (d) all of the above
- Which of the followings are the metabolic products of glucose and glutamine?
(a) CO₂ and NH₃ (c) CO₂ and Lactate
(b) Lactate and ammonium (d) Lactate only
- Which type of cells resist disaggregation in culture?
(a) all types of cells (c) Epithelial cells
(b) mesenchymal cells (d) endothelial cells
- When a cell line undergo senescence?
(a) when a mortal cell line has undergone the maximum number of cell population-doublings
(b) when a cross contamination occurs
(c) when a mycoplasma contamination occurs
(d) under all of the above conditions
- Which of the following enzymes for disaggregation of tissue may result into poor plating efficiency?
(a) Collagenase (b) Trypsin (c) Pronase (d) Dispase
- Which of the following is not a predominant amino acid of collagen?
(a) Glycine (b) Proline (c) Alanine (d) Methionine
- Gap junctions are predominant in
(a) Urinary bladder (b) Cardiac muscles (c) Adipose tissue (d) CNS Grey matter
- Growth medium used for culture of rat hepatocytes is:
(a) L-15 Leibovitz medium (c) Ham's F-12 medium
(b) DMEM (d) RPMI-1640

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

- Give the general feature of squamous and cuboidal epithelial cells.
- What precautions are necessary to avoid contamination of animal cell cultures?
- Define 'stem cell niche', give appropriate examples.
- Explain the role of CO₂ incubator in animal cell culture.
- How does a monolayer culture differs from that of suspension culture?
- Define/Explain following embryo technologies: ZIFT, GIFT.
- How Class II biosafety cabinets differ from Class I biosafety cabinets?
- How can angiogenesis and Invasiveness be checked in malignantly transformed cell lines?

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(P.T.O.)

- Q.3 (a) Describe the molecular organization of different cell adhesive molecules and write their role. (06)
- Q.3 (b) Explain the general principles and provisions necessary in tissue culture laboratory. (06)
- OR
- Q.3 (b) Explain any four applications of cell culture. (06)
- Q.4 (a) Discuss the chromosome and DNA analysis techniques used for the characterization of cell lines. (06)
- Q.4 (b) What is tissue disaggregation? What are different ways by which a tissue can be disaggregated after isolation and dissection? (06)
- OR
- Q.4 (b) Describe the different factors that indicate the need for the replacement of culture medium. (06)
- Q.5 (a) Describe different techniques involved in the animal cell separation. (06)
- Q.5 (b) List out the major extracellular matrix components used in media and explain the importance of feeder layer and condition media for cell culture. (06)
- OR
- Q.5 (b) Write the major differences between normal cells and transformed cells and explain any two techniques for the immortalization of cell line. (06)
- Q.6 (a) Describe the culture of any one epithelial cell. Write its characterization during culture and discuss its applications. (06)
- (b) Write notes on:
- (i) Amniocentesis (03)
 - (ii) In Vitro Fertilization (03)
- OR
- (b) Write a note on embryonic and adult stem cells. (06)

X

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