

SEAT No. _____

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[28]

SARDAR PATEL UNIVERSITY

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

Friday, 13th April, 2018

10:00 a.m. to 1:00 pm

PS04EBIT02 – Animal Biotechnology

TOTAL MARKS: 70

Q1. Choose the most correct option for the following questions and write in your answer book. (08)

1. The cartilage tissue mainly contains collagen.....

- (a) Type I (b) Type II (c) Type III (d) Type IV

2. The antibodies against can be used for the characterization of epidermal cell line.

- (a) Lamins (b) Keratins (c) Desmin (d) Vimentin like

3. Which of the following is a cell line from colon?

- (a) WEHI (b) CaCO (c) Friend (d) HaCat

4. The suitable glucogenic amino acids used as energy source in media are

- (a) Glutamyl - Glycine (c) Glutamyl - Methionine
(b) Glutamyl - Cysteine (d) Glutamyl- proline

5. The metabolic toxicity of a compound can be checked using cell line by.....

- (a) Cell membrane integrity
(b) Clonogenic ability
(c) MTT reduction test
(d) Using filter well insert

6. The Ca^{2+} is required in media to induce differentiation in

- (a) Glial cells (b) Erythroblast (c) Myeloid cells (d) Keratinocytes

7. The transformed cell lines usually undergo population doublings.

- (a) Up to 10 PD (b) 10 to 20 PD (c) 20 to 80 PD (d) More than 100 PD

8. cells are independent of senescence

- (a) Germ cells (b) Stem cells (c) Transformed cells (d) all of above

[P.T.O]

Q2 Answer any Seven from the following.

(14M)

1. Write the full form and role of PDGF, FGF, TGF β and IGF1 growth factors.
2. Write the role of kinesin and dynein.
3. How continuous cell line differs from finite cell line?
4. Name any four physiological factors used to induce differentiation in cell line. Write their role.
5. Write the importance of CO₂ incubator in animal cell culture.
6. Explain how telomerase can induce immortalization.
7. What is amniocentesis? Write its importance in diagnosis.
8. Explain the following growth characteristics of cells in in vitro conditions.
(i) Anchorage dependent (ii) Anchorage independent
(iii) Density dependent (iv) density independent
9. What is conditioned medium? Write its composition and significance.

Q3. (a) Discuss the detailed protocol for the culture of any epithelial cell. (6M)

(b) Describe the molecular organization of following junctions. (6M)

- (i) Desmosomes (ii) Hemidesmosomes (iii) Adherent junctions

OR

(b) Discuss different techniques to induce immortalization in cell line. (6M)

Q4. (a) Write the characteristics of embryonic stem cells and discuss their applications for human therapeutic aspects. (6M)

(b) Give the details of major nutrients of chemically defined media. (6M)

OR

(b) Discuss the importance of serum free media and write its composition. (6M)

Q5. (a) Describe any three techniques used for the characterization of cell lines. (6M)

(b) Give an overview on different methods used for disaggregation of tissues to initiate primary culture. (6M)

OR

(b) Describe the protocol for the development of primary culture from embryonic tissues. (6M)

Q6. (a) Answer the following. (6M)

i. Write applications of cell lines for toxicity study

ii. Discuss any three techniques for identification of apoptosis in cell lines.

(b) Define cell cloning with respect to cell culture and discuss different techniques for the isolation of clones. (6M)

OR

(b) Answer the following. (6M)

i. Define transgenic animals and write their applications.

ii. Discuss any two techniques for the separation and purification of cell lines based on the physical properties of cells.