

[87]

SARDAR PATEL UNIVERSITY

M Sc IV Semester Examination

Date: 15-04-2017 Day: Saturday

Time: 02.00 PM To 05.00 PM

Subject: BIOCHEMISTRY

Paper: PS04CBIC01 – Animal Biotechnology

Marks: 70

Q1. Select appropriate answer for the following.

(8M)

(i) Which of the following cell adhesive molecule does not require Ca^{2+} for adhesion?

- (a) Integrins (b) Selectin (c) Cadherin (d) N adhesion molecules

(ii) Which of the following is a liver specific cell line?

- (a) Caco-2 (b) S180 (c) HEP-G2 (d) HeLa

(iii) At pH 10, phenol red indicator turns

- (a) Purple (b) Pink (c) Yellow (d) White

(iv) The EDTA is required in the media to enhance disaggregation of

- (a) Epithelia (b) Bone marrow (c) Adipose (d) Lymphocytes

(v) The differentiation property of neuroendocrine cells is

- (a) Immunoglobulin (b) Domes
(c) Tyrosine aminotransferase (d) Catecholamines

(vi) The dihydrofolate reductase gene can be amplified by treating the cells with

- (a) Methotrexate (b) Mitomycin C (c) Phorbol ester (d) Cytochalasin b

(vii) Influence of allergen on epidermis along with dermis can be checked by release of

- (a) FGF (b) KGF (c) Cytokines (d) cAMP

(viii) Which of the following is not true for embryonic stem cells?

- (a) Exhibit clonogenic properties
(b) Generated after gastrulation
(c) Undergo symmetrical cell division
(d) Can develop teratomas

Q2. Answer briefly any Seven from the following. (14M)

- (1) Explain various modifications to increase oxygen availability for cells requiring high oxygen during culture.
- (2) Name different types of laminar-flow hoods and write their importance in animal cell culture.
- (3) How cell lines can be immortalized by using viral genes and telomerase?
- (4) Explain the role of carbon dioxide in animal cell culture.
- (5) Name any four neuroglial cells and state their functions.
- (6) Explain the principle of flow cytometry and write its importance in cell separation.
- (7) Write the importance of using poly-D-lysine and matrigel as substrate coating.
- (8) Explain any two methods used for the development of transgenic cell line or transgenic animals.
- (9) What is amniocentesis technique? Write its therapeutic significance.

Q3. (a) Describe the complete culture protocol for any simple or stratified epithelia. Write its characterization and applications. (6M)

(b) List out various assays to study apoptosis in cultured cells and describe any three assays in detail. (6M)

OR

(b) Describe any three assays to study cytotoxicity in cell line. (6M)

Q4. (a) Describe the organization of cell-cell junctions. (6M)

(b) Describe complete protocol for enzymatic and mechanical disaggregation of tissues to develop primary culture. (6M)

OR

(b) Discuss all the steps for the establishment of a cell line from primary culture. (6M)

Q5. (a) Describe various constituents of complete media. (6M)

(b) Why is the characterization of cell lines necessary? Discuss chromosomal analysis methods for cell line characterization. (6M)

OR

(b) Describe different conditions that improve clonal growth in monolayer culture and suspension culture. (6M)

Q6. (a) Describe the cell separation techniques based on the following aspects

(i) Cell density (ii) Cell size (iii) Antibody based technique (6M)

(b) Discuss the characteristics of transformed and malignantly transformed cell lines. (6M)

OR

(b) Write a note on adult stem cells. (6M)
