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Sardar Patel University

M.Sc. III Semester Biotechnology

PS03EBIT04 (Animal Biotechnology)

Date: 06/12/12 **Max Marks: 70**

Time: 2:30 – 5:30pm

Q.1 Select the **most appropriate answer** from the following **1×8**

I. Which of the following is **not correct**

a. The tissue culture medium must be sterile and isotonic to the cells
b. Artificial media contains partly defined component
c. Antibiotics in media encourage the development of antibiotic resistant organism
d. Transmembrane proteoglycans interact via RGD (Arg-Gly-Asp) motif

II. The need to **subculture** a monolayer is determined by the following criteria

a. Density of cultur
b. Time since last subculture
c. Exhaustion of media
d. All of the above

III. **Earle's balanced salt solutions** and **Eagle's spinner salt solutions** are equilibrated with gas phase containing _____ carbon dioxide.

a. 0 – 0.1%
b. 6 – 10%
c. 2 – 5%
d. 10 – 20%

IV. The **osmolarity** of the animal cell culture media should be maintained between

a. 280 – 300 µOsm/lit
b. 280 – 300 Osm/lit
c. 280 – 300 mOsm/lit
d. None of the above

V. **HeLa** cells are

a. Anchorage dependent cells
b. Anchorage independent cells
c. Both a and b
d. None of the above

VI. Which of the following cell/s are **independent to senescence**

a. Germ cells
b. Stem Cells
c. Transformed cells
d. All of the above

VII. Which of the following is **not correct**

a. Collagenase is mostly preferred for the disaggregation of epithelial cells than trypsin
b. Induced pluripotent stem cells (iPSC) are derived from non-pluripotent/somatic cells
c. The orientation of the cytoskeleton inside the cell can't control the orientation of the matrix produced outside
d. Shock treatment is one of the physical methods used for cell synchronization

VIII. Bulk of cells in a **tumor** have **limited life span** because of

a. Genetic aberration
b. Terminal differentiation
c. Apoptosis/Natural senescence
d. All of the above

Q.2		Attempt **any seven** of the following and describe in brief	2×7
	I.	**Cell-cell** and **cell-matrix interaction.**	
	II.	Explain in brief the physical aspects of **cell substrates**.	
	III.	Which are the various **balanced salt solutions** generally used in the animal cell culture.	
	IV.	Which are the various **Eagle's medium** and its derivatives.	
	V.	Give the formula to calculate the **population doubling level** (PDL) (generation number).	
	VI.	**Genetic instability** in cell transformation.	
	VII.	**Cold trypsinization.**	
	VIII.	Name the different **transfection** methods.	
	IX.	**FACS.**	
Q.3	A.	Give an overview of the types of **molecules** that bind **cells** to each other and to the **extracellular matrix**.	06
	B.	Give an account of **microfilaments, microtubules** and **microtubule motors.**	06
		OR	
	B.	Explain importance and **mode of action** of different **chemicals** used in **sterilization.**	06
Q.4	A.	Explain briefly the **various attachment factors, lipids, hormones** and **polyamines** present in serum.	06
	B.	Give an account of the various **buffering systems** and **antibiotics** generally used in the animal cell culture.	06
		OR	
	B.	Describe advantages and disadvantages of **serum containing media.**	06
Q.5	A.	Discuss different **enzymatic methods** for animal cell line disaggregation.	06
	B.	Give an account of the various **cytogenetic methods** used for the **cell synchronization.**	06
		OR	
	B.	Describe different techniques involved in the animal **cell separation.**	06
Q.6	A.	Differentiate between the **transgenic** and **cloned animals** with suitable examples.	06
	B.	Discuss the culture, characterization and significance of **epithelial cells.**	06
		OR	
	B.	What are **stem cells**? Enumerate and explain the **basic** and **genetic characters** showed by stem cells.	06

ALL THE BEST