

Code No: 07A82302

R07

Set No. 2

IV B.Tech II Semester Examinations, APRIL 2011
ANIMAL CELL SCIENCE AND TECHNOLOGY
Bio-Technology

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. What is the role of embryonic stem cells in development? Explain. [16]
2. What is scaling up of animal cell culture? Explain. [16]
3. What are the applications of tissue engineering? [16]
4. Elaborate on the nature and importance of the following in cell culture media:
 - (a) Biotin
 - (b) Choline chloride
 - (c) inositol
 - (d) Thiamine. [4×4]
5. Write short notes on the following with reference to autoclaves:
 - (a) Principle of operation
 - (b) Safety consideration
 - (c) Testing for a successful run
 - (d) Potential applications. [4×4]
6. Write about:
 - (a) Matrigel.
 - (b) Collagen gel. [16]
7. Describe any two indirect methods of cell determination and comment on their relative merits. Write principle and method of estimation:
 - (a) Protein determination.
 - (b) DNA determination. [8+8]
8. Describe the principle of operation of flow cytometer (Fluorescence Activated Cell Sorter) and its applications in cell separation and characterization. [16]

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1. Elaborate the theory of stem cell produces human neurons in the medicine. [16]
2. Explain carbondioxide is indispensable for the cell growth in culture medium. [16]
3. (a) What is the principle of "MTT Assay".
(b) Describe the procedure and method of calculation of cell growth by employing "MTT Assay". [8+8]
4. Explain in detail the types of organ culture? [16]
5. Write about:
(a) Embryonic stem cells.
(b) Markers for embryonic stem cells. [16]
6. Comment on the role of the following supplements generally added to the basic medium:
(a) L-glutamine
(b) Antibiotics
(c) Serum
(d) HEPES. [4×4]
7. Describe the principle, method of operation and application of the following techniques:
(a) Centrifugal Elutriation
(b) Isopycnic sedimentation.. [8+8]
8. Explain in detail the isolation of cell colonies by irradiation. [16]

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Set No. 1

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1. With reference to the preparation of media, answer on the following:
 - (a) Filtration Units
 - (b) Filtration Method
 - (c) Autoclavable media
 - (d) Media preparation from powder. [4×4]
2. What are the limitations of organ culture? Explain. [16]
3. Describe two assay methods for the cytotoxicity testing of drugs and chemicals. [16]
4. Discuss the properties and mechanism of action of the following antibiotics in cell cultures:
 - (a) Gentamycin
 - (b) Penicillin
 - (c) Streptomycin
 - (d) Tyrosine. [4×4]
5. Describe the procedure involved in a typical microtitre plate assay for evaluation of cytotoxicity of a drug candidate. [16]
6. What is cloning efficiency rate and its implication in monolayer formation? [16]
7. Discuss in detail of the existence of stem cells in the germ line. [16]
8. What is tissue engineered constructs? Explain at least with one example. [16]

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R07**Set No. 3**

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Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Explain in detail the suspension cloning. [16]
2. Discuss the importance and functions of the following in the minimum essential medium?
 - (a) Ca²⁺ and Mg²⁺
 - (b) Fe²⁺
 - (c) NaCl
 - (d) Phosphates. [4×4]
3. Write about gene expression markers used to recognize the embryonic stem cells. [16]
4.
 - (a) What are cell lines?
 - (b) How are they developed?
 - (c) How are they different from primary cells
 - (d) Potential advantages of cell lines over primary cells. [4×4]
5. Write the detailed explanation about the bone tissue engineering. [16]
6. Define "Cryopreservation". Describe the procedure and precautions to be taken for cryopreservation of mammalian cells. [16]
7. Write briefly about:
 - (a) Hollow fibers.
 - (b) Matrigel. [16]
8. Define the following parameters of growth of cells in culture:
 - (a) Viable cell density
 - (b) Integral of viable cell density
 - (c) Specific growth rate
 - (d) Volumetric cell growth rate. [4×4]
