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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E.

Semester: VI

Branch: Biotechnology

Duration: 3 hrs.

Course Code: 19BT6DE3ABT

Max Marks: 100

Course: Animal Biotechnology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Design an animal cell culture laboratory with at least 5 major instrument/equipment used in culture and maintenance of animal cells. **10**

b) Culturing animal cells has both applications and limitations. With suitable examples justify the statement. **06**

c) Though it is not recommended, researchers use antibiotic for culturing and maintenance of animal cells. Why? **04**

UNIT - II

2 a) Enumerate on any two types of bioreactors used for animal cell culture. List the factors to be considered while designing reactor for scale up for the production of monoclonal antibodies. **08**

b) Differentiate between Natural and Artificial media. What is the role of serum in mammalian cell culture? **08**

c) Batch to batch variations in FBS adversely effects the experimentation. Justify the statement. **04**

UNIT - III

3 a) Trypsanization is one of the crucial steps for subculturing of mammalian cells. With appropriate flow chart explain the process. **04**

b) What are the features/parameters considered for organ culture in the following given Techniques. Which of the following is superior and why? **08**

i) Raft Methods
ii) Grid Method
iii) Watchglass Technique

c) Tissue-derived cells need a surface or cell culture support for normal proliferation while those derived from the haematopoietic system and tumour cells proliferate in suspension and do not need any surface for cell growth. With suitable examples classify them and write their features. **08**

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - IV

4 a) Inconsistencies in the IC_{50} data for anticancer chemotherapeutic agents have yielded irreproducible experimental results and thus reciprocally contradictory theories in modern cancer research. Validate the statement emphasising on the importance of values of IC_{50} . **10**

b) Each chromosome pair in a karyotype have its own distinct "bar code" of bands. How does scientist decode this and why does this plays crucial role in diagnosing diseases and disorders? **10**

OR

5 a) Cell viability and sterility are important elements of quality control. Justify the statement by applying the principle of various assays/tests done for analysis of viability and sterility in cancerous cells. **10**

b) Plating efficiency is a very sensitive test and can affect other tests such as toxicity and calculation of labelling index. Substantiate the statement with appropriate justification. **10**

UNIT - V

6 a) What is QT? How does MAS linked to QTL. Explain the importance of MAS in animal breeding. **10**

b) With suitable examples in each category elucidate how animal cells culture have immense importance in development of vaccines and growth factors. **10**

OR

7 a) Enumerate on the applications of animal cell culture in: **10**

- In vitro drug testing
- Testing of environment pollutants

b) In recent years, the term Eugenics has seen a revival in bioethical discussions on the usage of new technologies such as CRISPR and genetic screening. Deliberate on whether these technologies should still be called eugenics? **10**
