

MSc Sem.-2 Examination

410

Biotechnology

May-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q.1 Answer the following

Discuss the fermentative production of citric acid / acetic acid in detail with the process flow chart. Also, briefly discuss the factors influencing the production. 14

or

(a) Discuss in detail the fermentative production process of vitamin B2. 7

(b) Give a detailed account of microbial xanthan production and factors influencing its production. Enlist applications of xanthan gum 7

Q.2 Answer the following

Write a detailed note on fermented foods and role of starter culture
14

or

(a) Explain major phases for button mushroom cultivation.. 7

(b) Write a note on probiotics and their mode of action . 7

Q.3 Answer the following

Discuss the process of scaling up animal cell culture for industrial production. What challenges are faced in scaling up, and how can bioreactors help address these challenges?
14

or

(a) Explain the concept of animal cell culture and its significance in biotechnology and pharmaceutical industries 7

(b) Describe the different types of animal cell culture systems. Discuss the advantages and disadvantages of primary cultures, cell lines, and hybridomas 7

Q.4 Answer the following

(P.T.O)

N275-2

Discuss the applications of animal cell culture in drug discovery and toxicology testing. How do in vitro cell culture models help in screening potential drugs and studying their effects on cells?. 14

or

(a) What are the essential requirements for maintaining an animal cell culture? Discuss the role of temperature, pH, and nutrient medium in cell growth 7

(b) Explain the role of serum in animal cell culture media. Discuss the alternatives to animal-derived serum and their advantages in research and industrial applications 7

Q.5 Answer the following(Any Seven)

14

(a) Which is a key molecule for PHA synthesis?

(b) Name the by-product produced during the fermentation of streptomycin. What is the role of dendrimers in drug delivery?

(c) What are monoclonal antibodies?

(d) Write the role of lycopenes.

(e) What is Rennet Coagulation in cheese making?

(f) What is the meaning of propagation in baker's yeast production?

(g) What is cryopreservation?

(h) What is the difference between finite and continuous cell lines?

(i) Name two components of a typical culture medium.

(j) What is subculturing or passaging in cell culture?

(k) What are serum-free media?

(l) State any two limitations of animal cell culture.
