

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, DECEMBER 2018

THIRD YEAR [BATCH 2016-19]

MICROBIOLOGY [Honours]

Paper : V [Gr-B]

Date : 19/12/2018

Time : 11 am – 1 pm

Full Marks : 50

Answer any five questions :

[5×10]

1. a) What is solid state fermentation? Mention its advantages and disadvantages. [2+1+1]
b) How does secondary screening help in the selection of a improved strain? [2]
c) What are the different types of materials used for immobilisation process? [3]
d) What do you mean by immobilisation of enzyme? [1]
2. a) Freezing of cell is a harsh process which can damage cell beyond repair. Justify. [2.5]
b) Differentiate between: Primary metabolites vs. secondary metabolites. [2]
c) Write short notes on: Preservation of strains by lyophilisation. [2.5]
d) Describe different types of biofermenters? [3]
3. a) Glucose concentration is very much critical for the production of antibiotics - Justify? [2]
b) 'During the trophophase, the cell mass increases logarithmically but as the resources become limiting growth rate drops and production stops'- explain this fact with graphical presentation. [2]
c) What are auxotrophic mutant? How is it useful in large scale L-lysine production? [1+2]
d) What are the differences between beer and wine? What are the different types of wines? [2+1]
4. a) Give two examples each of bacteria and yeast species used in large scale production of ethyl alcohol. [1.5+1.5]
b) How would you recover penicillin from the fermented broth? [3]
c) What are semi synthetic penicillin? [1]
d) What do you mean by HET? [2]
e) What are the raw materials used for ethanol fermentation? [1]
5. a) Define the terms:
i) Allotype
ii) Histotope
iii) Isotype
iv) Paratope [1.5×4]
b) What are Haptens? [2]
c) What do you mean by antibody avidity? [2]
6. a) B cell epitopes consist of both sequential and non-sequential amino acids. Justify with suitable examples. [4]
b) How do adjuvants function inside the body? [3]
c) Differentiate between Agglutination and Precipitation. [3]
7. a) With respect to T cell maturation, what do you mean by a) positive selection b) Negative selection? [2+2]
b) What are the differences between Tc cell and CTL? [2]
c) How does monoclonal response differ from polyclonal response? [2]
d) What are the significances of apoptosis? [2]

8. a) What were the main challenges in sequencing of antibody structure? How was it overcome? [2+3]
b) Hematopoietic stem cells are pluripotent or multipotent- explain. [2]
c) What are the properties of B cells? [3]
9. a) Name any one normal flora of skin. How does it inhibit gram negative bacteria?
b) What is the function of mucociliary escalator?
c) How do bacteria adhere to host tissue? Explain with suitable examples. [(1 +2)+2+(2+3)]
10. a) What is the role of hyaluronidase in bacterial pathogenicity?
b) How does sialic acid help bacterial pathogens to avoid host defense?
c) What is the role of endotoxin in bacterial pathogenesis?
d) What are the differences between virulence and pathogenicity?
e) What are the properties of shiga toxin? [2+2+3+2+1]

_____ × _____