

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [2016-19]

B.A./B.Sc. THIRD SEMESTER (July – December) 2017

Mid-Semester Examination, September 2017

Date : 12/09/2017

MICROBIOLOGY (Honours)

Time : 11 am – 1 pm

Paper : III

Full Marks : 50

1. a) What is meant by cellular drinking? [2]
b) What is the role of caveolae in the process of endocytosis? Illustrate with suitable diagram. [3]
2. a) Distinguish between synaptic, paracrine, and endocrine mechanisms of cell signalling. [2+5]
b) Briefly explain the role of G-protein linked receptors in cell signalling. [2+5]
3. a) How does RNA polymerase catalyse the polymerization? [2]
b) How does sigma factor mediate the binding of RNA polymerase to the promoter? [2]
c) Write a note on the formation of transcription bubble during transcription. [2]
4. a) Write down the principle of Anderson sampler. [3]
b) Write a short note on sanitation of air by UV radiation. [3]
c) Write down scientific name of an air borne bacterial pathogen and the disease caused. [1]
5. a) What do you mean by feedback inhibition? What are the types of feedback inhibition? [1+3]
b) An inhibitor, which is reversible in nature, reduces both the $V_{\max}$ and K_m of an enzyme-catalyzed reaction. What type of inhibition is the inhibitor doing? Draw the Michaelis -Menten as well as the Lineweaver-Burke plot for such inhibited reaction. [1+2]
6. a) Why is it necessary to formylate the first amino acid methionine during translation? [2]
b) How did Nirenberg's team decipher the genetic code following a triplet binding assay? [4]
c) How was it proved that *lac* locus on *Escherichia coli* chromosome contains two genes- *lacZ* and *lacY*? [2]
7. a) State the characteristics of primary active transport and secondary active transport. Explain with appropriate examples. [3]
b) Write a brief account on ionophores. [2]
8. a) What is the function of cofactors which are associated with enzymes? [1]
b) Coenzyme can be considered as special class of substrate- Justify [2]
c) What is the basis of Dixon plot in reversible inhibition? [2]
d) What are the differences between phosphatase and phosphorylase? [2]