

U.G. 3rd Semester Examination - 2020
Molecular Biology & Biotechnology
[HONOURS]
Skill Enhancement Course (SEC)
Course Code : MBBT-H-SEC-1/101&105-T

Full Marks : 40 Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all the question from selected Option.

OPTION-A

MBBT-H-SEC-1-101-T

(Biofertilizers)

1. Answer any **five** of the following: $2 \times 5 = 10$
- a) What are carrier-based inoculants?
 - b) What are Actinorrhizal biofertilizers?
 - c) What is associative symbiotic biofertilizer?
 - d) Discuss the effectiveness of green manure as biofertilizer.
 - e) What is organic farming?
 - f) Explain the *Anabaena azollae* association.

- g) State the role of *Azotobacter* as biofertilizer.
- h) What are PGPR?

2. Answer any **two** of the following: $5 \times 2 = 10$
- a) Discuss in detail the role of blue green algae as biofertilizer.
 - b) List the merits and demerits of biofertilizers over chemical fertilizers.
 - c) Discuss the processes involved in recycling of biodegradable municipal, agricultural and industrial wastes.
 - d) Explain the methods involved in making biocompost.
3. Answer any **two** of the following: $10 \times 2 = 20$
- a) Explain the method for isolation of nitrogen-fixing bacteria, phosphate- and potassium-solubilizing bacteria from soil. State the role of the aforementioned bacteria as biofertilizer. $6+4$
 - b) Mention the steps involved in production of VAM inoculum by pot culture. Explain the role of VAM with respect to phosphate nutrition of soil. $6+4$

- c) List out all the steps involved in production of vermicompost. Discuss the field applications of vermicompost. 6+4
- d) Write down the steps involved in production of mass culture of *Rhizobium*. Explain the effectiveness of *Rhizobium* as biofertilizer in different types of soil. 6+4

OPTION-B

MBBT-H-SEC-105-1A

1. Answer any **five** of the following : 2×5=10
- a) Define active site of an enzyme. Catalytic activity of an enzyme depends on which factor? 1+1
- b) Chemical reactions need an initial input of energy called _____. How does an enzymes work? 1+1
- c) What are the four methods of protein purification?
- d) What is ΔG and $\Delta G^\ddagger$ of a reaction?
- e) Define Zymogen.
- f) What are Isozymes?
- g) How do Suicide inhibitors act?
- h) Allosteric enzymes consist of _____ and _____.

2. Answer any **two**: 5×2=10
- a) What advantages do multienzyme complexes provide?
- b) Describe Transition State Theory.
- c) How do pH and temperature affect the activity of an enzyme? $2\frac{1}{2}+2\frac{1}{2}$
- d) What is Site-directed mutagenesis? Describe the two steps of this mutagenesis. 2+3
3. Answer any **two**: 10×2=20
- a) What is co-operativity? What does Negative cooperativity mean? Define half-site reactivity. Name two enzymes that show half-site reactivity. 2+4+2+2
- b) What is Protein sequencing? What are the techniques used for Protein sequencing? Describe any one of the techniques. 2+2+6
- c) What is two substrate reaction? Describe the two types of two substrate reactions. 2+4+4
- d) Write short note on Competitive inhibition and Non-competitive inhibition. What is Ribozyme? 4+4+2
