

Exam. Code : 103205

Subject Code : 1346

B.A./B.Sc. 5th Semester

BOTANY

Paper—V(B)

(Biochemistry and Biotechnology)

Time Allowed—3 Hours]

[Maximum Marks—35

Note :—There are total of **NINE** questions. Question No. **1** will be compulsory and is of short answer-type questions (**3-4** lines). The remaining **EIGHT** questions have been set from equal distribution of syllabus out of which candidates are required to attempt **FOUR** questions. All questions (including Q. No. **1**) have equal marks i.e. **7** marks each.

1. (a) What are Coenzymes ?
- (b) Define redox potential.
- (c) Differentiate between saturated fatty acids and unsaturated fatty acids.
- (d) What is activation energy ?
- (e) What is the significance of TCA cycle ?
- (f) What are the sites of fatty acid storage ?
- (g) What are marker genes ? 1×7=7

2. (a) What are the factors that affect enzymatic activity ?
Explain briefly.
- (b) Explain the detailed effects of temperature on enzyme activity. 3+4
3. Write short notes on :
- (a) Induced-fit model
- (b) Lock and key model. 3+4
4. (a) Write a note on $F_0 - F_1$ ATPase.
- (b) Give the schematic representation of Kreb's cycle. 2+5
5. Explain the process of oxidative phosphorylation. 7
6. Give the features and energetics of β -oxidation of fatty acids. 7
7. (a) Explain the mechanism of action of nitrate reductase enzyme.
- (b) What are the steps involved in the process of biological nitrogen fixation ? Enlist the names of the microorganisms and their hosts responsible for fixing atmospheric nitrogen. 3+4
8. (a) Define the terms : differentiation, cellular totipotency and morphogenesis.
- (b) Write a note on tools and techniques of recombinant DNA technology. 3+4
9. (a) What are transposons ? Give examples of transposable elements in both prokaryotes and eukaryotes.
- (b) Differentiate between genomic and cDNA library. Give their significance. 4+3