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G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.



PG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: M.Sc., BOTANY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
IV	PART-III	CORE-14	P23B0414	BIOCHEMISTRY AND APPLIED BIOTECHNOLOGY

Date & Session: 26.04.2025/FN

Time: 3 hours

Maximum: 75 Marks

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer <u>ALL</u> Questions.
CO1	K1	1.	Which of the following is not a correct statement of law of thermodynamics? a) Energy can neither be created nor be destroyed b) The total energy of the universe remains constant c) Enthalpy change depends only upon initial and final state d) It is impossible to construct a perpetual motion machine
CO1	K2	2.	Trace out the highest redox potential a) NAD b) O ₂ c) FAD d) FMN
CO2	K1	3.	The value of K _m indicates affinity between a) Enzyme and coenzyme b) Coenzyme and substrate c) Enzyme and cofactor d) Enzyme and substrate
CO2	K2	4.	Select one of the following factors is not responsible for the denaturation of proteins? a) Charge b) organic solvents c) pH change d) heat
CO3	K1	5.	The Beta sheets allowed region is present in which of the following quadrants of Ramachandran plot? a) First quadrants b) third quadrants c) second quadrants d) fourth quadrants
CO3	K2	6.	Inhibition of succinate dehydrogenase by succinic acid falls into which category of inhibition? a) Substrate inhibition b) Competitive inhibition c) Non-competitive inhibition d) Product inhibition
CO4	K1	7.	The formation of embryo like structure from the pollens in the tissue culture medium is due to a) Organogenesis b) cellular totipotency c) test tube culture d) double fertilization
CO4	K2	8.	Trace out the type of plant cells can be used for somatic embryogenesis a) Palisade cells of leaves b) Parenchymatous cells of xylem c) Epidermis d) Medullary cells of stem
CO5	K1	9.	Identify the first transgenic crop a) Cotton b) Flax c) Tobacco d) Neem
CO5	K2	10.	The presence of antisense and complementary sense RNA can lead to the formation of a) mutation b) carcinogens c) protein d) duplex

Course Outcome	Bloom's K-level	Q. No.	SECTION – B (5 X 5 = 25 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b)
CO1	K2	11a.	Explain the law of thermodynamics with biological System. (OR)
CO1	K2	11b.	Describe the mechanism of buffer action and its significance.
CO2	K2	12a.	Discuss the properties of proteins and their importance. (OR)
CO2	K2	12b.	Summarize the properties of fatty acids.
CO3	K3	13a.	List out the factors affecting enzyme action. (OR)
CO3	K3	13b.	Describe the role of coenzyme in enzyme functions.
CO4	K3	14a.	Define Totipotency. Justify it with morphogenetic development. (OR)
CO4	K3	14b.	Provide the protocol for anther culture with illustration.
CO5	K4	15a.	Analyze the various applications of antisense RNA technology. (OR)
CO5	K4	15b.	Explain the various methods involved to improve the self-life of fruits.

Course Outcome	Bloom's K-level	Q. No	SECTION – C (5 X 8 = 40 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b)
CO1	K4	16a.	Analyze the various types of chemical bonding with suitable examples. (OR)
CO1	K4	16b.	Compare the law of thermodynamics with a food chain.
CO2	K5	17a.	Critical note on the classification of carbohydrates with its biochemical importance. (OR)
CO2	K5	17b.	Discuss the classification of lipids with suitable examples.
CO3	K5	18a.	Discuss about the enzyme's classification with suitable examples. (OR)
CO3	K5	18b.	Interpret the mechanism of enzyme action.
CO4	K5	19a.	List out the various stages of Micropropagation with a neat diagram. (OR)
CO4	K5	19b.	Discuss the procedure for protoplast isolation and culture. List out its importance.
CO5	K6	20a.	What is transgenic plant? Compile the various applications of transgenic plants. (OR)
CO5	K6	20b.	Explain the hairy root culture procedure in detail. How it will support the metabolite concentration enhancement.