

THE OPEN UNIVERSITY OF SRI LANKA
B. Sc / B. Ed DEGREE PROGRAMME -2010/11
BOTANY – LEVEL 4
BOU2200 / BOE4200: PLANT PHYSIOLOGY
ASSESSMENT TEST 11 (NO BOOK TEST)
DURATION: ONE (01) HOUR



REGISTRATION NO.

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DATE: MARCH 2011

TIME: 4.00 PM – 5.00 PM

PLEASE ANSWER ALL THE QUESTIONS ON THE SPACES PROVIDED

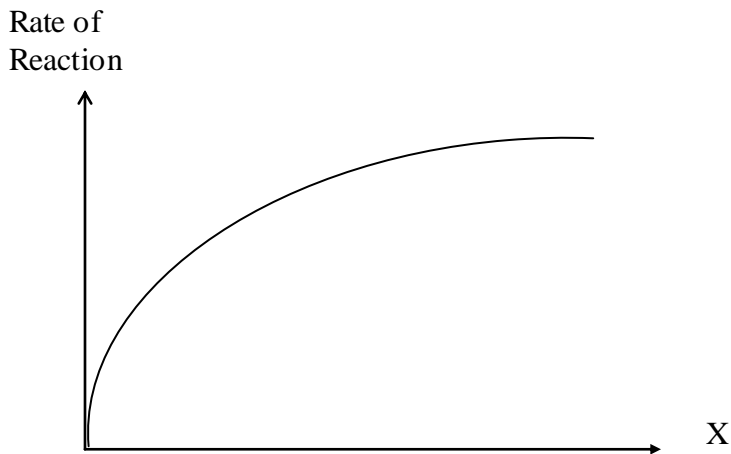
1. Which of the following is **not** a characteristic property of an enzyme?
 - a. Activity is sensitive to pH and heat
 - b. They catalyse both forward and reverse reaction
 - c. They are active in small amounts
 - d. All of them are proteins
 - e. They do not affect the equilibrium of the reaction

2. Explain the absolute specificity of enzymes briefly with an example.

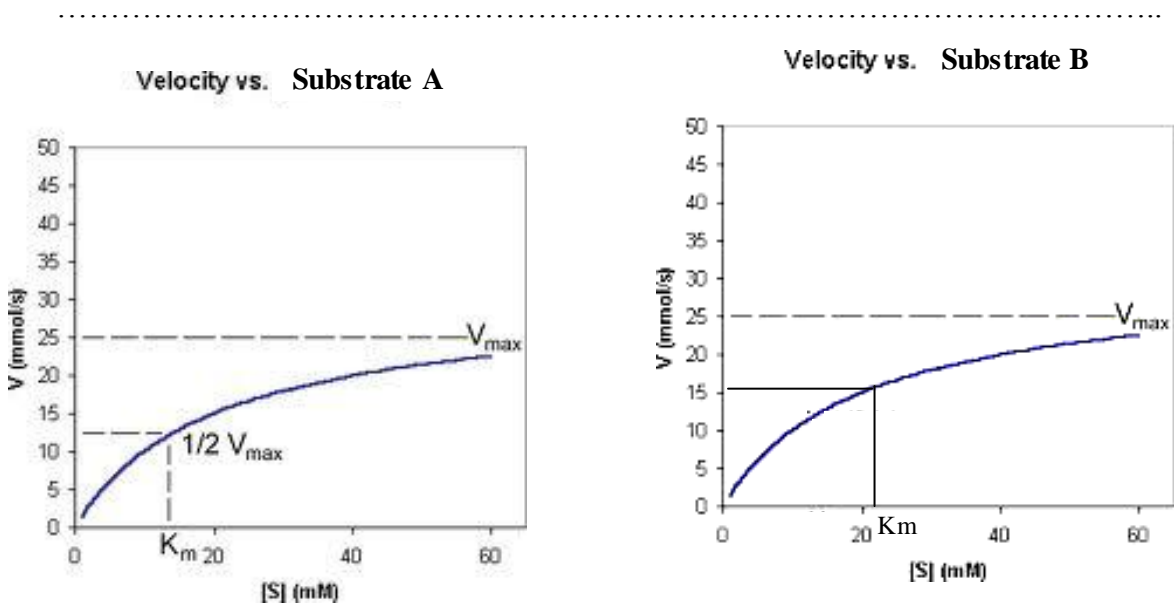
3. Illustrate the mechanism of enzyme action with completely labeled diagrams.

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4. What is the correct statement on cofactors?
- There are 3 types of co-factors; metal ions, coenzymes and activators
 - Co-factors convert holo-enzyme into apo-enzyme
 - Prosthetic groups are comprised exclusively of metal ions
 - Organic co-factors are called co-enzymes and act as either donors or accepters of electrons
 - Separation of metal ions that act as co-factors does not affect the catalytic activity of the enzyme.
5. Given below is the graph depicting the rate of reaction with a factor 'X'. Write two possible factors that can be 'X'.
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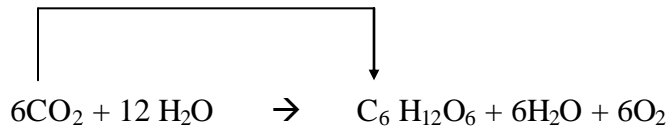


6. Michaelis- Menton constant (K_m) indicates the affinity of the enzyme to the substrate. K_m is inversely proportional to the degree of affinity. Following graphs show the rate of reaction of enzyme E with two substrates; A and B. Chose the most specific substrate for enzyme E and write the enzyme catalysed reaction.



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7. Photosynthesis is represented by following equation.



The above equation shows how Carbon of glucose is formed from its substrate CO_2 . Similarly, indicate the origin of H and O atoms in the products of photosynthesis on the above reaction.

8. Carotenoid is accessory pigment in the photosynthesis. Write two functions of the carotenoid in higher plants.

9. What is the incorrect statement regarding the chloroplast?
- They are surrounded by a double membrane structure
 - The stroma of the chloroplast is gel like material comprised of CO_2 fixing enzyme
 - The stack of lamellae in the chloroplast is called granum which appear as green spots
 - The chloroplasts have well defined areas for starch and lipid accumulation
 - The cavity of the thylakoid is filled exclusively with protein

10. Define the action spectrum of photosynthesis.

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13. Make a flow chart of nodule formation in legume plants due to symbiosis with *Rhizobium* bacterium.

14. What are the factors that affect the rate of respiration?
