Assignment 8

The data file for submitting this assignment has appeased. As per our records you have not submitted this assignment.

1. Consider reactions R1 to R5. Which of the following statements is true if the growth medium contains metabolites M1, M5, M7

   R1: M1 + M5 → M7
   R2: M5 + M6 → M1
   R3: M6 + M7 → M5
   R4: M7 → M6 + M5
   R5: M6 → answer

   a) R1 is a single path
   b) R5 and R6 are double paths
   c) R3 is a single path
   d) R5 and R6 are double paths
   e) R1 and R5 are single paths

   The answer is correct.

   Accepted Answers:
   R1 and R4 are single paths
   R5 is a single path

2. Consider the following reactions with gene-protein reaction relationship:

   R1: M1 + M5 → M7  Gene A and Gene B
   R2: M5 + M6 → M1  Gene C and Gene D
   R3: M6 + M7 → M5  Gene C and Gene E
   R4: M7 → M6 + M5  Gene C
   R5: M6 → answer

   Which of the following statements is true in a growth medium containing M1 and M5, if the metabolite M6 is required for cell survival?

   a) Gene A is a single path
   b) Gene A is a single path
   c) Gene C and Gene D are double paths
   d) Gene C and Gene D and Gene E are triple paths
   e) Gene C and Gene D are triple paths

   The answer is correct.

   Accepted Answers:
   R1 is a single path
   R4 is a single path
   R3 and R5 are double paths

3. Using the metabolic model of an organism, SFOS was carried out by enforcing the flux through reaction 5 at every step and noting the flux change in reactions 1, 2, 3 and 4 on different cases. The following was observed, for different fractions of maximum flux enforced (deltab) from converging to increasing fractions of 0.1, 0.2, ..., 0.9.

   Which reaction shows possible targets for overexpression?

   Reaction 1
   Reaction 2
   Reaction 3
   Reaction 4
   Reaction 5

   The answer is incorrect.

   Accepted Answers:
   Reaction 2

4. Under a given set of conditions, excess acid and inositol of P1 and P2 obtained through Flux Variability Analysis (FVA) are P1 = 0.3 M, S4 = 0.3 M and P1 = 0.3 M, S5 = 0.3 M respectively. Under the same conditions which of the following flux values is permissible?

   a) Flux through P1 is 0.22 and flux through P2 is 0.82
   b) Flux through P1 is 0.58 and flux through P2 is 0.58
   c) Flux through P1 is 0.58 and flux through P2 is 0.58
   d) Flux through P1 is 0.58 and flux through P2 is 0.58
   e) Flux through P1 is 0.58 and flux through P2 is 0.58

   The answer is incorrect.

   Accepted Answers:
   Flux through P1 is 0.58 and flux through P2 is 0.58

For the model given [pathway file], using CAMPRA Toolbox, answer the following questions:

5. What is the growth rate of the model? (Enter values correct to 3 decimal places)

   The answer is incorrect.

   Accepted Answers: [Type answer to be inputted]

6. What is the flux through the reaction 4? (Enter values correct to 3 decimal places)

   The answer is incorrect.

   Accepted Answers: [Type answer to be inputted]

7. What is the total number of exchange metabolites?

   The answer is incorrect.

   Accepted Answers: [Type answer to be inputted]

8. Change the upper limit of glucose (reaction number 100 in the model) to 4 and find the growth rate. (Enter values correct to 3 decimal places)