

Code No: R05212302

R05**Set No. 2**

II B.Tech I Semester Examinations, November 2010

BIOCHEMICAL THERMODYNAMICS**Bio-Technology****Time: 3 hours****Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is non ideal gas? How it is different from ideal gas? Compare PV data for ideal and non ideal gas.
 (b) Define generalized compressibility factor Z [10+6]
2. How EMP pathway related to cell wall components. [16]
3. Show that $d\bar{G}_i = \bar{V}_i dP - \bar{S}_i dT$ Where terms have usual meaning. [16]
4. Discuss in detail about the Heat Generation and Yield Factor Estimates. [16]
5. (a) State the Clausius statement of the second law of thermodynamics.
 (b) From second law of thermodynamic, how one can judge whether a given process is feasible or not? [6+10]
6. Show that multiple phases at the same T and P are in equilibrium, when fugacity of each Constituent species is the same in all phases ie. $\hat{f}_1^\alpha = \hat{f}_i^\beta = \dots = \hat{f}_i^\pi$ ($i = 1, 2, \dots, N$) [16]
7. Discuss the relation of equilibrium constants to composition in gas phase and liquid phase Reactions. [16]
8. Define adiabatic compressibility K_δ and show that the ratio of isothermal compressibility and adiabatic compressibility is equal to C_P/C_V or γ ie show that $C_P/C_V = K/K_\delta$ [16]

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R05**Set No. 4**

II B.Tech I Semester Examinations, November 2010

BIOCHEMICAL THERMODYNAMICS**Bio-Technology****Time: 3 hours****Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Define adiabatic compressibility K_δ and show that the ratio of isothermal compressibility and adiabatic compressibility is equal to C_P/C_V or γ i.e. show that $C_P/C_V = K/K_\delta$ [16]
2. Discuss in detail about the Heat Generation and Yield Factor Estimates. [16]
3. Discuss the relation of equilibrium constants to composition in gas phase and liquid phase Reactions. [16]
4. (a) What is non ideal gas? How it is different from ideal gas? Compare PV data for ideal and non ideal gas.
 (b) Define generalized compressibility factor Z [10+6]
5. (a) State the Clausius statement of the second law of thermodynamics.
 (b) From second law of thermodynamics, how one can judge whether a given process is feasible or not? [6+10]
6. Show that multiple phases at the same T and P are in equilibrium, when fugacity of each constituent species is the same in all phases i.e. $\hat{f}_1^\alpha = \hat{f}_i^\beta = \dots = \hat{f}_i^\pi$ ($i = 1, 2, \dots, N$) [16]
7. Show that $d\bar{G}_i = \bar{V}_i dP - \bar{S}_i dT$ Where terms have usual meaning. [16]
8. How EMP pathway related to cell wall components. [16]

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R05**Set No. 1**

II B.Tech I Semester Examinations, November 2010

BIOCHEMICAL THERMODYNAMICS

Bio-Technology

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Show that $d\bar{G}_i = \bar{V}_i dP - \bar{S}_i dT$ Where terms have usual meaning. [16]
2. How EMP pathway related to cell wall components. [16]
3. Discuss the relation of equilibrium constants to composition in gas phase and liquid phase Reactions. [16]
4. Discuss in detail about the Heat Generation and Yield Factor Estimates. [16]
5. (a) What is non ideal gas? How it is different from ideal gas? Compare PV data for ideal and non ideal gas.
(b) Define generalized compressibility factor Z [10+6]
6. Define adiabatic compressibility K_δ and show that the ratio of isothermal compressibility and adiabatic compressibility is equal to C_P/C_V or γ ie show that $C_P/C_V = K/K_\delta$ [16]
7. Show that multiple phases at the same T and P are in equilibrium, when fugacity of each Constituent species is the same in all phases ie. $\hat{f}_1^\alpha = \hat{f}_i^\beta = \dots = \hat{f}_i^\pi$ ($i = 1, 2, \dots, N$) [16]
8. (a) State the Clausius statement of the second law of thermodynamics.
(b) From second law of thermodynamic, how one can judge whether a given process is feasible or not? [6+10]

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R05**Set No. 3**

II B.Tech I Semester Examinations, November 2010

BIOCHEMICAL THERMODYNAMICS**Bio-Technology****Time: 3 hours****Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Show that $d\bar{G}_i = \bar{V}_i dP - \bar{S}_i dT$ Where terms have usual meaning. [16]
2. How EMP pathway related to cell wall components. [16]
3. Discuss in detail about the Heat Generation and Yield Factor Estimates. [16]
4. Discuss the relation of equilibrium constants to composition in gas phase and liquid phase Reactions. [16]
5. Show that multiple phases at the same T and P are in equilibrium, when fugacity of each Constituent species is the same in all phases ie. $\hat{f}_1^\alpha = \hat{f}_i^\beta = \dots = \hat{f}_i^\pi$ ($i = 1, 2, \dots, N$) [16]
6. Define adiabatic compressibility K_δ and show that the ratio of isothermal compressibility and adiabatic compressibility is equal to C_P/C_V or γ ie show that $C_P/C_V = K/K_\delta$ [16]
7. (a) State the Clausius statement of the second law of thermodynamics.
 (b) From second law of thermodynamic, how one can judge whether a given process is feasible or not? [6+10]
8. (a) What is non ideal gas? How it is different from ideal gas? Compare PV data for ideal and non ideal gas.
 (b) Define generalized compressibility factor Z [10+6]
